

THE WOLF SPIDERS OF AUSTRALIA (ARANEAE: LYCOSIDAE): 12.  
DESCRIPTIONS OF SOME WESTERN AUSTRALIAN SPECIES

R. J. MCKAY  
Queensland Museum

ABSTRACT

Redescriptions are provided for *Lycosa australicola* (Strand 1913), *L. clara* L. Koch 1877, *L. crispipes* L. Koch 1877, *L. marcentior* Simon 1909, *L. meracula* Simon 1909, and *L. tula* (Strand 1913). *Lycosa ariadnae*, *L. gibsoni*, *L. koyuga*, *L. maini*, *L. woonda*, and *L. yalkara* are described as new.

The lycosid fauna of Western Australia is, despite recent collecting, very poorly known. Large areas of the state, particularly the more arid and inaccessible regions, have not been surveyed for wolf spiders, and much collecting remains to be done before the fauna is documented. A large number of undescribed wolf spiders have been found, but in many cases these are represented by a few individuals of one sex only, or juveniles.

Because most species of wolf spiders show pronounced habitat specificity, many microhabitats need to be examined when collecting. These include:

Sand beaches: under shells and dead seaweeds.

Shingle beaches: under pebbles or stones; in coral shingle.

Coastal sand dunes: on dune slipfaces; in interdune areas; under shrubs and trees; on dune grasses.

Coastal plains: open sand areas; heathlands; below shrubs and trees in litter; grasslands; margins of swamps and lakes.

Rivers, lakes and ponds: wet sands at waters edge; under stones on creek beds; under gravel or pebbles; in decaying humus; on river banks under trees; in dry river sands; on grassy banks; at waters edge or on floating aquatic vegetation; in cracking clay soils.

Montaine habitats: on stony outcrops; under exfoliating boulders; under shrubs and trees; in grasslands; under snow; in litter or decaying humus.

Inland sandplains: on sand ridges; at base of dunes under vegetation; interdune clay soils; in *Triodia* grasslands; below trees.

Mulga (*Acacia* shrublands): open clay-loam soils; open sandy soils; below low shrubs; below trees in litter; in stony areas.

Rock ridges and gibber plains: on rock ridges (sheltering); on rocky soils (burrowing); on gibber plains; on sheetwashed pebble slopes.

Saltpans and claypans: burrowing in salt; burrowing in moist clays; in samphire clumps; in dry clay fissures.

Forest habitats: below stones; below logs; within leaf litter or humus; within fern humus (moundsprings); on heavy clay loams; on sandy soils; on previously burnt areas.

Disturbed habitats: pastured areas and crops; suburban lawns and gardens; margins of farm dams and tanks.

A number of quite distinct species may be found on saltpans or sandridges in different regions and these may have restricted distributions (McKay 1976), whereas other species may be found Australia-wide. The greatest diversity of wolf spiders is to be found in arid or semi-arid regions and are generally rare or cryptic in rainforest or wet sclerophyll forests (see Main 1976). For a list of Australian species see McKay (1973), and subsequent papers in this series.

*Lycosa ariadnae* sp. nov.  
(Fig. 1A-L)

MATERIAL EXAMINED

HOLOTYPE: Western Australian Museum WAM 72-246, ♀M, C.L. 7.9 mm, 5 km west of Darkan, W.A., collected by Dr Barbara Y. Main, 26 October 1961. In spirit.

PARATYPES: Western Australia; Arthur River 1.6 km south (121 mi. peg), 27.x.1961, BYM, WAM 72-244; Augusta, 21.ii.1969, RJM, R. W. George, WAM 71-468-71; Australind, 22.x.1969, RJM, R. W. George, WAM 71-368-73; Bakers Hill, 23.xi.1962, W. D. Lane, WAM 69-413-26; Bremer Bay, 29.iv.1972, P. G., A. J., G. W. Kendrick, QM.W4666; Brentwood (Perth), 23.iv.1969, RJM, WAM 69-767-70; Bruce Rock at Nangeen Hill, 21.iv.1971, N. McKenzie, A. A. Burbidge, WAM 71-1856; Brunswick Junction, 22.x.1969, RJM, R. W. George, WAM 71-330-41; Bunbury, 22.x.1969, RJM, R. W. George, WAM 71-357; Bunker Bay, Cape Naturaliste, 20.ii.1969, RJM, WAM 69-485-94, 22.x.1969, RJM, R. W. George, WAM 71-342-49, 25.v.1971, RJM, WAM 71-1406; Bussleton 8 km north, 22.x.1969, RJM, R. W. George, WAM 71-303-7; Cape Freycinet, 25.i.1971, HB, WAM 71-716-30; Cape Naturaliste, 22.x.1969, RJM, R. W. George, WAM 71-308-29; Cockleshell Gully, 24.ii.1963, BYM, WAM 71-926-33; Cowaramup Bay, ix.1970, RH, WAM 71-666; Dandaragan, 4.iv.1953, BYM, WAM 71-662; Darkan 5 km west, 26.x.1961, BYM, WAM 72-245; Dempster Inlet, 5.i.1971, L. E. Koch, K. Youngson, WAM 71-962-3; Desperate Bay north of Snag Island, 27.ii.1971, RJM, B. Ryle, WAM 71-850, WAM 71-935-6; Dongara, 5.vii.1971, RJM, WAM 71-1858; Dryandra State Forest, 11-12.x.1969, P. G., G. W. Kendrick, WAM 70-43-7; Dunsborough at beach, 22.x.1969, RJM, R. W. George, WAM 71-466; Fitzgerald River Reserve, 7.i.1971, L. E. Koch, K. Youngson, WAM 71-203-6, 16.vii.1970, AB, WAM 71-400-3, 11.vii.1970, RJM, WAM 71-514-5, 6.i.1971, L. E. Koch, K. Youngson, WAM 71-957-61, 11.vii.1970, RJM, J. G., RH, WAM 71-1937-44, 15-18.vii.1970, AB, WAM 71-1945-55; Fremantle at Buckland Hill, 10.i.1969, RJM, WAM 69-54-63; Golden Bay, Mandurah, 21.i.1971, RJM, WAM 71-670-3, WAM 71-754-8, WAM 71-840-1; Green Head, 27.ii.1971, R. Johnstone, WAM 71-761, WAM 71-839, 22.iv.1972, R. Johnstone, WAM 72-723-33, WAM 72-734-41; Hill River, 18.ii.1971, RJM, WAM 71-851; Hyden, 9.iv.1971, B. Evans, WAM 71-1101-2, WAM 71-1857; Mcelup, 22.x.1969, RJM, R. W. George, WAM 71-478; Mississippi Bay, 31.iv.1972, A. Chapman, WAM 72-332-4; Moora, 23.xi.1962, W. Lane, WAM 71-920-3; Moore River National Park, 5.ii.1971, N. McKenzie, WAM 71-745-7; Moorine Rock 13 km west, 8.i.1970, HB, QMW 4665 Murchison River, 24-25.i.1969, RJM, JG, P. Snowball, WAM 69-303-5; National Park west of Mundaring, 29.v.1968, RJM, JG, WAM 69-44, WAM 69-101; Perth at Kings Park, i.1969, RJM, WAM 69-45, 19.xi.1962, W. Lane, WAM 71-904-19; Pingelly, 8.xii.1962, W. Lane, WAM 69-412, 9.xii.1962, W. Lane, WAM 71-924; Pingrup 27 km east at Greenshields Soak, 31.iii.1971, J. Ingram, WAM 71-1089-1100; Point Peron, 14.iv.1968, RH, WAM 70-198, 29.xii.1962, BYM, WAM 71-479-88; Ross-moyne, Canning River, 1970-71, RJM, WAM 70-220-3, WAM 71-553, WAM 71-664-5, WAM 71-683-91, WAM 71-759-60, WAM 71-947; Rottnest Island, 8.xi.1962, W. Lane, WAM 69-411, WAM

71-925, 25.xi.1970, RJM, WAM 71-667-9, WAM 71-842-3, WAM 71-937-8, 18.i.1954, BYM, WAM 71-844-8, WAM 71-949-56, xii.1962, BYM, WAM 71-964-71, 20.i.1954, BYM, WAM 71-1409-20; Tarin Rock Reserve, 17.v.1971, WAM Survey, QM W4663; Thomsons Lake Reserve, 28.iv.1970, RJM, WAM 70-61)6; Two People Bay, 9-11.ii.1970, J. L. Bannister, WAM 71-378, WAM 71-934, 5.ii.1970, J. L. Bannister, A. Burbidge, WAM 71-1407-8; Walyamoning Rock, 31.iii.1972, AB, A. Chapman, QM W4664; Wanneroo, 12-13.iv.1969, RH, WAM 71-377, at Badgerup Swamp, 26.iv.1969, RH, WAM 71-396-7; Windy Harbour, 21.i.1971, G. W. Kendrick, WAM 71-849; Yanchep, Forestry Reserve, 17.iii.1971, RJM, T. Wood, WAM 71-852-5; Yorkrakine Rock, 12.vi.1971, RH, WAM 71-1405.

#### DESCRIPTION (Based on the holotype)

Carapace light brown with an indistinct pale lateral band and some vague dark brown marks radiating from the centre; a distinct pale longitudinal stripe commences within the ocular quadrangle, broadens behind the PL eyes and continues to before the fovea where it widens to form a short anteriorly directed arm on both sides, narrowing to the commencement of the fovea where it again broadens into a diamond shape and then narrows to the posterior margin; paturon brown with pale hairs on the anterior surface becoming dark brown to black towards the fang; labium and maxillae brown with dark brown hairs; sternum and ventral surface of the coxae dark brown. Abdomen light brown above, densely speckled with dark brown to form a vague pattern of three light tent-shaped chevrons surrounded by dark areas, and two large postero-lateral pale blotches; the anterior dorsal surface has a large pale transverse broad lunate-shaped pale area; sides pale brown to buff with close-set dark brown spots and flecks, becoming paler on the lower slopes; venter pale brown with a triangular black field pointing posteriorly and not reaching the spinnerets. Legs and palpi pale brown with indistinct brown blotches and some longitudinal brown stripes on the retrolateral surface of the femora; the distal ends of the femora and the tibiae dark brown.

Anterior row of eyes slightly procurved and shorter than the second row, AM larger than AL. Ratio of eyes AM:AL:PM:PL=10:6:26:21; distance AM-AM 4, AM-AL 3.5, AM-PM 4, AL-PM 4, PM-PM 12. Clypeus to AM 7. Length of first eye row 44; length of second eye row 59.

Chelicerae with three promarginal teeth, the middle one largest; three retromarginal teeth of equal size. Labium longer than broad.

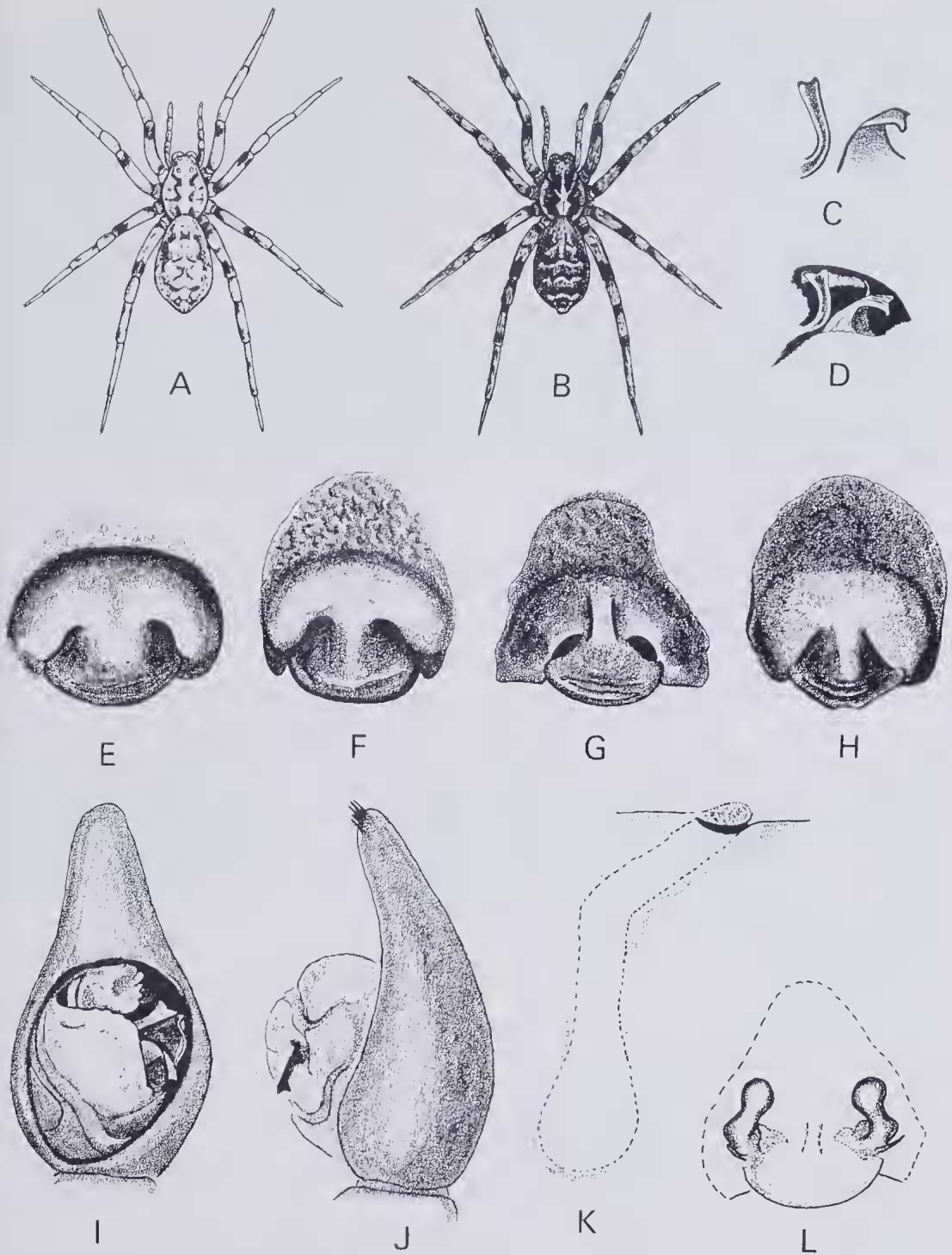


FIG. 1: *Lycosa ariadnae*. A, mature female WAM 71-664; B, mature female WAM 71-665; C, D, embolic guide and median apophysis of two mature males; E, epigynum of holotype; F, G, H, epigyna of WAM 71-949, WAM 70-338, WAM 72-245; I, male palpal organ of WAM 71-884; J, palpal organ of WAM 71-884 expanded; K, burrow; L, internal genitalia of a female from Fitzgerald River.

VARIATION: The colour pattern of *Lycosa ariadnae* is very variable. On the white dune sands the colour is frequently white, pale cream or light brown with dark brown flecks and streaks that outline the typical colour pattern described above. On dark soils or red earths the coloration may be quite striking with a distinct longitudinal stripe and lateral band on a dark brown to red-brown carapace, and a well marked abdomen with three to four pale chevrons surrounded by dark brown, the anterior dorsal surface frequently much lighter brown, cream, orange or pale pink, with the sides dark brown or very pale. On dark loams, near swamps or on burnt substrates this species may be almost black with a white or cream pattern as above. Two paratypes WAM 71-664 and WAM 71-665 are illustrated (Fig. 1 A, B).

The juveniles may have the adult coloration but frequently have the anterior dorsal surface of the abdomen bright orange, pink, or orange-red. The paturon may have the anterior surface brown, orange or reddish with the lateral condyle brown, orange or bright red.

The venter in juveniles below C.L. 4.0 mm is usually pale, the black area commences as a small posteriorly directed triangle or a pair of small triangles which fuse with subsequent moults to form one large triangle which may terminate before the spinnerets in mature specimens from the drier eastern localities or expand into a completely black venter with rounded margins touching or enclosing the spinnerets in adults from the coastal plain. The sternum is normally pale in small

juveniles but becomes darker as the venter assumes the normal black field. The legs may be banded with dark brown or black, or may have the distal tips of the femora and all other joints dark brown or black. This species may show considerable variation in colour on the sandy soils of the Swan Coastal Plain, especially in areas dominated by *Banksia* and *Casuarina* scrub and subjected to periodic burning.

Variation in the shape of the epigynum is shown for the holotype and three paratypes in Fig. 1E-H. The epigynum has a broad median guide surrounded anteriorly by a raised and well sclerotized boss; the internal genitalia of one paratype is shown in Fig. 1L. The male palpal organ is illustrated in Fig. 1C, D, 1, J, and electron scanning micrographs of a male palp (regd. ANN 26-27, Uni. Qd.) at 45 and 110 magnifications provided in Plate 1. The median apophysis is curved proximally with the tip expanded and slightly bifurcate (Fig. 1C, D) somewhat similar in shape to the flattened embolic guide shown pointing distally in micrographs (see also McKay 1974, fig. 4). A study of the male palpal variation under a low power dissecting microscope showed that the shape of the median apophysis and embolic guide varied slightly. An analysis of this variation employing the electron scanning microscope may demonstrate that two races of *Lycosa ariadnae* may exist; one on the coastal plain, and one inland, although the mature males of the coastal plain respond to females from the inland population that is characterised by having a more uniform coloration and smaller black area on the venter.

Eye measurements of the holotype and six paratypes are given as a percent of the total width of the first eye row in Table 2.

SIZE RANGE: Mature females C.L. 5.2 to 7.9 mm. Mature males C.L. 5.0 to 5.7 mm.

DIAGNOSIS: *Lycosa ariadnae* has a distinctive epigynum and the male palp has a flattened

TABLE 1: MEASUREMENTS OF LEG SEGMENTS OF  
*L. ARIADNAE* IN MM

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus
1	5.3	2.9	3.9	4.0	2.0
2	5.0	2.8	3.6	3.9	2.0
3	4.9	2.5	3.5	4.5	2.0
4	6.3	2.7	4.9	6.1	1.8
Palp	2.5	1.4	1.4	—	2.0

TABLE 2: EYE DIAMETERS AND INTERSPACES OF *L. ARIADNAE* CONVERTED TO PERCENT OF THE TOTAL WIDTH OF THE FIRST ROW OF EYES

Regd. No.	Sex	C.L.	AM	AL	PM	PL	AM:AM	AM:AL	PM:PM	AM:PM	AL:PM
HOLOTYPE	♂M	7.9	23	14	59	48	9	8	27	9	9
WAM 71-844	♂M	7.5	25	14	57	50	5	6	25	9	11
WAM 71-845	♀M	7.2	24	19	58	51	6	5	29	9	10
WAM 71-846	♂M	6.2	27	15	60	51	9	6	27	9	12
WAM 71-847	♂M	6.1	28	16	62	55	9	5	25	9	9
WAM 70-340	♂M	7.3	27	14	64	52	6	4	26	7	8
WAM 72-245	♂M	8.0	24	15	57	48	5	6	24	9	11

terminally expanded embolic guide with a slightly bifurcate to emerginate tip.

LIFE HISTORY

Mature males may be found throughout the year but are more numerous during the summer months. The mature males appear in November, are most abundant in January, and decline rapidly in number by late February. Courtship and mating is at a peak during January, especially at dusk on warm still nights with a temperature of between 22–28°C.

Courtship was observed in the laboratory and the male commences as soon as the female pheromone is sensed. The male rapidly drums or scratches the palps on the ground so vigorously that the noise is quite audible. A series of quick jerky movements accompanied by very rapid up and down bobbing of the abdomen continues while the male searches for the female, who responds by lowering the body and remaining motionless. The male mounts the female from above and whilst continuing the abdominal vibrations places the left palpal organ around the left side of the female and makes contact with the epigynum which is then pulled slightly around to the left with a twisting of the female abdomen. The haematodocha then expands, sperm transfer takes place through the embolus, the membrane deflates, and the palpal organ is removed, the entire process taking about 10–15 seconds. The palps are applied alternately, left palp to left side of the female, the right palp to the right side; up to 80 separate applications may take place and a successful mating can take up to 56 minutes to complete. The male then breaks free and retreats.

On 15 January 1971 a series of cross mating experiments were undertaken to assess the response of mature males to females. The results of these experiments are shown in Table 3. A vigorous response by the male consisting of vigorous palpal drumming and seraping, abdomen bobbing and searching movements is denoted by + + +, a palpal drumming and slow abdomen bobbing by + +, and a weak response by slow palpal scratching by +; a nil response is denoted by — and a successful mating by M. Only four males were allowed to mate with the test females; the males were removed prior to mating to ensure that the female did not kill the male, and so that males could be tested with a number of females. On two occasions males mated with females before they could be removed from the test jar; these mated females were not used for further tests as they frequently attacked the males as soon as they were placed in the jar. Egg-coecons were not produced by females employed in any of the tests. Males were found to respond to females after a successful mating but on some occasions showed a diminished response. By 2 February, 1971, many males that had shown a + + + response to females were reluctant to respond and when disturbed or placed into a test jar occupied by a female, frequently lost their co-ordination and with violent spasmodic twitching died very rapidly.

By the end of February almost all mature males have died and most females are gravid. The egg coecons are constructed throughout March into mid April. The cocoon measures about 5.9 to 7.0 mm and 4 cocoons contained 102, 103, 140 and 151 eggs, 1.15 to 1.20 mm in diameter. The

TABLE 3: *LYCOSA ARIADNAE* COURTSHIP OF MATURE MALES TO MATURE FEMALES

FEMALES	MALES									
	Rossmoyne 1	Rossmoyne 2	Rossmoyne 3	Rossmoyne 4	Golden Bay 1	Golden Bay 2	Golden Bay 3	Rottnest 1	Rottnest 2	Dongara 1
Wickepin 1	—	++	+++	+++		—	+++			
Wickepin 2	+	++	++	++	++	—	+	+++	M	—
Cowaramup 1	++	+++	+++	+++		—	+++	+++	++	—
Rottnest 1	—	—	+++	++	++	+	M	+++	+++	—
Rottnest 2	+	++	+++	+++	+++	+	+++	+++	+++	+
Golden Bay 1			+++	M				+++	+++	+
Rossmoyne 1		+++	M	+++	+++			+++	+++	++
Rossmoyne 2		++	++	++				+++		+
Rossmoyne 3	—	—	+	+	—	—	+	++		—
Rossmoyne 4		+++	+++	++	+++		+++	+++	+++	—

female remains in the burrow with the egg-cocoon until the spiderlings hatch, and only rarely are females observed with an egg cocoon in the field. The young remain on the female for about two weeks and disperse during April, May and early June. The young spiders are vagrant throughout the winter and construct burrows in early spring.

Growth is rapid during October and November until maturity is attained. Although all males appear to die during February, some females continue through the winter months until the following season; it is not known if these females are unmated or have produced an egg-cocoon.

*Lycosa ariadnae* will survive temperatures of up to 42.2°C under laboratory conditions for a period of 30 minutes. During the summer months ground temperatures may exceed this limit, and all adults are within the burrow during the day, only emerging at dusk to hunt. On still warm summer nights *L. ariadnae* may be exceedingly numerous in suitable habitats, frequently in association with *Lycosa immansueta* (= *V. spenceri*?) *L. pullastra*, *L. godeffroyi*, *L. leuckartii*, *P. serrata*, *T. impedita*, *L. propitia*, *T. phegeia*, *T. oraria*, *L. dimota* and *L. australicola*.

#### HABITAT

*Lycosa ariadnae* is most abundant on the sandy soils of the Swan Coastal Plain particularly in *Banksia* scrublands. A variety of other habitats are also occupied including coastal dune systems, coastal heathland, open cleared areas with sparse grass cover, open forests of Jarrah and Red Gum on lateritic soils and clay-loams, Tuart forests, *Casuarina* and Yate thickets. Unsuitable habitats are grasslands, thick swamp vegetation, and forest areas with a heavy leaf litter. Sandy tracks or grave road verges in heavy coastal forest areas frequently have many *L. ariadnae* wandering in the open whereas this species is uncommon on the leaf littered habitat nearby.

At Rossmoyne near Perth a small area of *Banksia* forest with a thick cover of leaf litter and grass contained very few *L. ariadnae* and numerous *L. immansueta* although the former species was the dominant lycosid on the open sandy areas previously cleared or burnt three years previously. In 1969 the *Banksia* forest was burnt, thus removing the leaf litter; by 1971 this forest was dominated by *L. ariadnae*.

In March 1971 a controlled burn of a forestry reserve of *Banksia* and Tuart was made by the Forestry Department, W.A., at Yanchep. This area had been building up a ground cover of grass and leaf litter and the dominant species the previous month was *L. immansueta*. At 8.00 p.m.,

9 hours after the burn another collecting survey was made whilst logs in the area were still burning. The ground was largely cleared of undergrowth and burnt black. The only species collected was *L. ariadnae*, specimens of which were found adjacent to the burrows or actively hunting nearby. Five burrows were excavated in the burnt area and the depth of the burrow varied between 5.0 and 5.5 cm. Unfortunately, time did not permit the burrows of *L. immansueta* and *L. ariadnae* to be marked before the fire and no survival data was obtained. It is possible that *L. immansueta* had also survived the burn but no specimens had emerged by 9.30 p.m. *L. immansueta* is quite constant in coloration and frequents leaf litter in forested areas below trees.

#### BURROW

A shallow burrow some 5 to 12 cm in depth with the upper part slanted and an abrupt bend, has a soft silk lid or flap covered with sand grains. The female enters the burrow head first and the soft lid falls back into place completely covering and concealing the burrow entrance (Fig. 1K).

#### DISTRIBUTION

Southwestern Western Australia within a line drawn from the Murchison River bridge at the North West Coastal Highway to Mullewa, 30 km east of Wubin, between Merredin and Southern Cross and Hopetown. *L. ariadnae* is absent from the Karri forest near Manjimup, Pemberton and Walpole, and in areas of heavy Jarrah forest.

#### DERIVATION

Named after Mrs Ariadna Neumann of the Western Australian Museum in appreciation for her painstaking translation of the numerous descriptions of Australian Wolf Spiders in L. Koch's 'Die Arachniden Australiens'.

#### *Lycosa australicola* (Strand, 1913) (Fig. 2A-L)

*Tarentula australicola* Strand, 1913, pp. 619-20, Central Australia.

*Allocosa australicola*: Roewer, 1954, p. 205.

*Lycosa australicola*: McKay, 1973, p. 378.

#### MATERIAL EXAMINED

HOLOTYPE: Senckenberg Museum No. 2255, ♂M, C.L. 8.0 mm, collected V. Leonhardi, 1909, 'Central Australien'.

OTHER MATERIAL: Western Australia; Cadgi Hills, 14.x.1962, BYM, WAM 71-1360-1; Caren Caren Brook, near Jurien Bay, 28.ii.1971, RJM, WAM 71-866; Carnarvon 81 km north, 20.ii.1962, BYM,

WAM 71-1323, WAM 71-1740-3; Cockleshell Gully, 26.ii.1963, BYM, WAM 71-1337; Coorow 14 km SSW, 22.xi.1970, AB, WAM 71-1315-8; Desperate Bay north of Snag Island, 27.ii.1971, RJM, B. Ryle, WAM 71-861-5; Dryandra State Forest, 11-12.x.1969, P. G. & G. W. Kendrick, WAM 71-473-4, 17-19.xi.1971, T. Evans, QM W4201; East Pingelly, 8.xii.1962, BYM, WAM 71-1339-42; 23.ix.1962, BYM, WAM 71-1346, 9.xii.1962, BYM, WAM 71-1353-4, WAM 71-1362-5, WAM 71-1375-6, Fields Find, 30.i.1968, L. E. Koch, QM W4202; Fitzgerald River Reserve, 7.i.1971, L. E. Koch, K. Youngson, WAM 71-207; Greenhead, 22-23.iv.1972, R. Johnstone, WAM 72-720-2; Greenshields Soak 27 km east Pingrup, 30.iii.1971, J. Ingram, T. Evans, WAM 71-1357-9; Houtman Abrolhos Islands, 1963, BYM, WAM 71-422, Gun Island, 6.vii.1971, RJM, WAM 71-1377-80, Island NW of Middle Island, 7.vii.1971, RJM, WAM 71-1381-6; Jiliman Rock, 28.iii.1954, BYM, WAM 69-1012; Kalbarri, Mureheson River 17 km south, 3-5.ii.1969, Kalbarri WAM Survey, WAM 69-666; Kings Park, 10.iii.1971, RJM, S. Stanley, WAM 71-858, 19.xi.1962, BYM, WAM 71-1324-7; Lake Austin, 9.i.1962, BYM, WAM 71-1338; Learmonth, 13.iv.1969, N. Cross, WAM 71-1345; Madura, 19 km south, WAM 71-1343-4; Moora, 23.xi.1962, BYM, WAM 71-1355; Moore River at Guilderton, 12.xii.1971, RJM, WAM 71-1996; Mt. Hampton, 10.xi.1970, N. McKenzie, WAM 71-859-60; Murehison River at highway, 12.ii.1962, BYM, WAM 69-471, 30.i.1969, RJM, WAM 71-1006, at Tutula Well, Paradise Flat, 22-3.i.1969, RJM, JG, WAM 71-1319-22, 12.v.1972, RJM, QM W4200; Point Walter, 15.ii.1963, BYM, WAM 71-1329-32; 27.xii.1962, BYM, WAM 71-1366-74; Rottneest Island, 10.iii.1960, BYM, WAM 71-892-3, 20.i.1954, BYM, WAM 71-1005, 9.xi.1962, BYM, WAM 71-1333-6, WAM 71-1347-52, 20.i.1954, BYM, WAM 71-1738-9; Tarin Rock Reserve, 16.v.1971, WAM 71-1356; Wickenpin, 19.i.1971, A. Paterson, WAM 71-775, WAM 71-1328; Wiluna, WAM 37-2203; Wubin, 7.xii.1971, RJM, JG, P. Snowball, WAM 71-284.

brown specks; within the pale slightly pointed dorsal area is a triangular dark brown mark pointing anteriorly and followed by two much smaller triangular brown marks and indistinct very pale brown chevrons; undersurface with a somewhat triangular black field pointing posteriorly and scattered black-brown spots outlining a vague rounded pale brown field that reaches the spinnerets. Spinnerets pale brown. Legs and palpi uniform dark honey-brown.

Anterior row of eyes with the upper tangent slightly procurved, the lower tangent very slightly recurved, narrower than the second row, AM larger than AL. Ratio of eyes AM:AL: PM:PL = 10:8:24:20; distance AM-AM 4.5, AM-AL 3, AM-PM 6, AL-PM 6, PM-PM 10. Clypeus to AM 8. Width of first eye row 47; width of second eye row 56.

Chelicerae with three promarginal teeth, the middle one largest; three retromarginal teeth of about equal size. Labium slightly longer than broad.

TABLE 4: MEASUREMENTS OF LEG SEGMENTS OF  
*L. AUSTRALICOLA* IN MM

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus
1	5.8	3.1	4.3	4.3	2.3
2	5.5	3.0	3.8	4.0	2.2
3	4.9	2.7	3.3	4.5	2.1
4	6.0	2.2	4.7	6.6	2.9
Palp	3.1	1.4	1.3	—	2.1

Epigynum horseshoe-shaped with a narrow median guide and a broad almost rectangular transverse guide.

VARIATION: Juveniles are similarly patterned to adults although the colour may be brighter and the pattern more distinct; the venter of juveniles is at first uniform pale cream to fawn, then two small dark spots appear anteriorly, gradually elongate with growth and may form two (sometimes three) black-brown bars, the lateral ones longest; all bars may merge anteriorly and then posteriorly to form a rounded black field enclosing two pale fawn diverging or parallel stripes in some adults or the triangular field of others. Carpace may be dark brown to rust-red brown with cream, fawn, or tan longitudinal median and lateral bands; legs pale fawn-brown to light brown, red-brown or dark brown.

The epigyna of six mature females is illustrated in Fig. 2E, F, I, J, K, L. The male palpal organ has a curved cutlass-shaped or blade-like embolic

#### DESCRIPTION (Based on WAM 71-1740)

Carapace dark brown with a sharply defined broad fawn longitudinal stripe that fills the ocular quadrangle, broadens slightly behind the PM eyes and tapers to the posterior margin; a fawn marginal band gradually merges with the dark brown hair of the lateral slopes; some faintly darker radiating stripes appear on the lateral slopes of the carapace after preservation but these are not present in life; paturon dark brown with an oblique orange stripe near the base; lateral condyles red-brown; fangs black; labium and maxillae brown; sternum and lower surface of coxae brown. Abdomen pale fawn above, the anterior side brown, defining the pale fawn upper surface, lateral surface speckled with fine dark

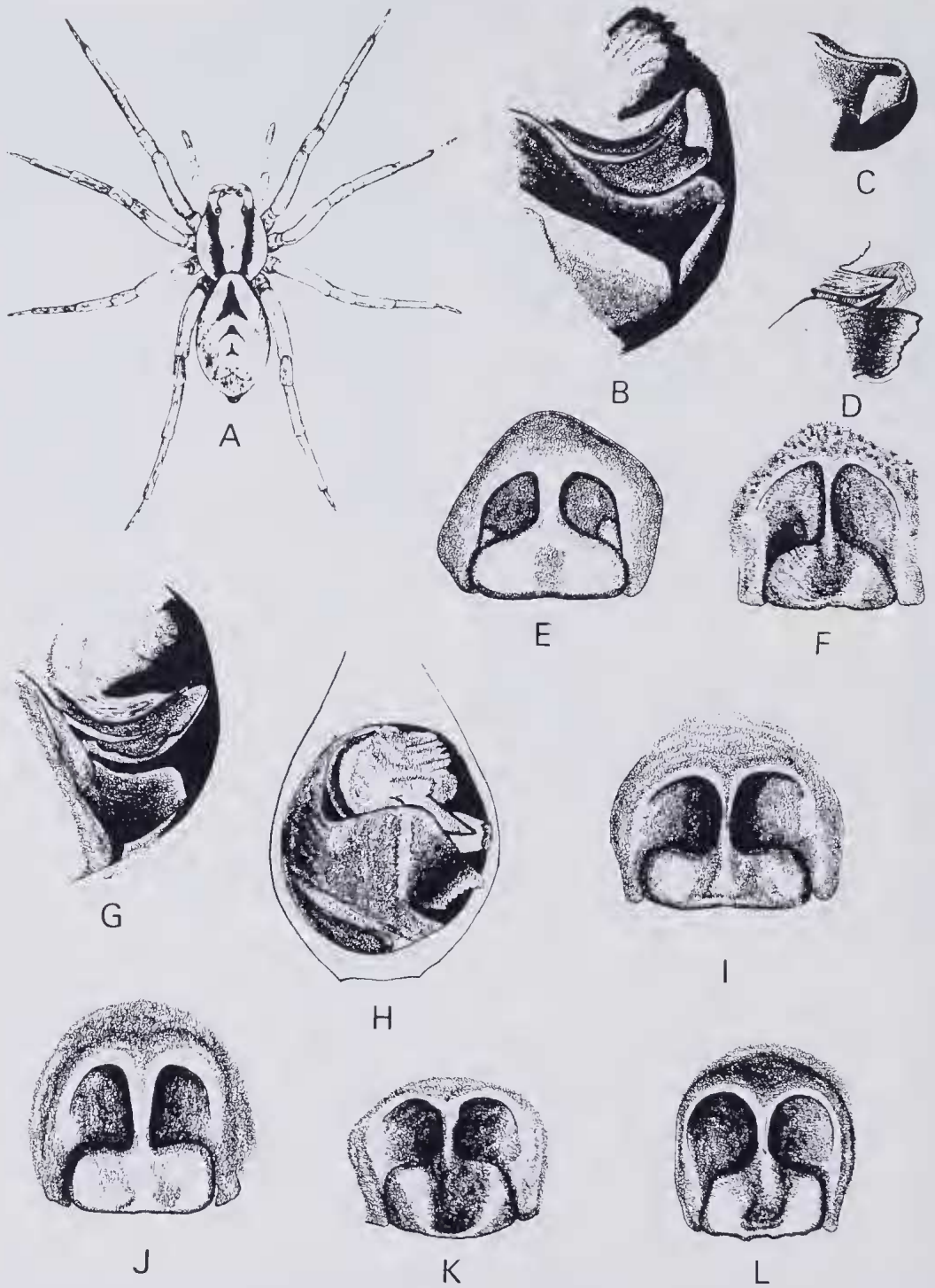


FIG. 2: *Lycosa australicola*. A, mature female WAM 69-779; B, male palpal organ of WAM 71-1738; C, D, median apophysis of male palpal organ WAM 71-1741; E, F, I, J, K, L, epigyna of females WAM 71-1740, WAM 71-1358, WAM 71-1743, WAM 71-1345, WAM 71-892, WAM 71-1356; G, H, male palpal organs of WAM 71-1329, WAM 71-1741.



guide; the median apophysis is a broad structure with the end bent, curved, cup-shaped or strongly recurved (Fig. 2B, C, D, G, H).

SIZE RANGE: Mature females C.L. 5.5 to 8.8 mm. Mature males C.L. 5.8 to 7.0 mm.

DIAGNOSIS: *Lycosa australicola* is distinct from all other Australian species in coloration, shape of the epigynum and in having a broad stout median apophysis with a bent or recurved tip.

#### LIFE HISTORY

Mature females are present throughout the year but are more abundant during the summer months. Males are present from late November to March and abundant in February. Courtship commences late November and continues through the summer months; the response to the female pheromone is quite rapid, the male drums the palpal cymbium on the ground and approaches with short quick movements and mounts the female in a dorsal head to tail position whilst curling the abdomen over the face of the female and bobbing it up and down, or vibrating it rapidly before the eyes of the stationary female. Palpal insertions were counted in one male from Desperate Bay mated with a female from Wickiepin; after 18 alternate insertions the male cleaned the palp with the chelicerae, vibrated one foreleg and then continued mating for 2 more alternate insertions before suddenly breaking free and rapidly retreating from the female who instantly recovered, gave chase, and killed the male.

Two females carrying egg-cocoons were found in March, one with the cocoon measuring 7.2 mm in diameter and containing 141 young ready to emerge. Females with young were found during April and May, and in June and July very small juveniles were observed. Growth appears to be quite rapid in spring; penultimate males and females appear during November and are abundant in December.

#### HABITAT

A variety of soil types are inhabited, usually in open sclerophyll forest but coastal heathlands may have scattered individuals. Red earths with Salmon Gum *Eucalyptus salmonophloia* carry large populations of *L. australicola*, found wandering on open ground or more commonly near leaf litter below trees. Sandy soils including the vegetated sand dunes of the coastal heathland near Jurien Bay may have occasional specimens but the species becomes more numerous in the

Jarrah forests on laterite and in light clay-soils with Wandoo or Brown Mallet *E. astringens*. On the red loam soils and hard red clay soils with Red Gum *E. camaldulensis* between Carnarvon and Murchison River this species is abundant, although not the dominant wolf spider. Small populations were found on littered sand areas under Swamp Yate *E. occidentalis* at the Fitzgerald River, but *L. australicola* was not found on the open sandplain areas nearby.

#### BURROW

Only two burrows were located, both were situated at the base of trees in well consolidated clay-sand (Kings Park) or heavy red clay-loam (south of Wubin). The burrows were open with a diameter of 10 and 12 mm and descended obliquely downwards adjacent to the tree roots for a distance of 11.5 cm and 5 cm where they enlarged slightly. On both occasions the female moved into the burrow head first and both burrows were difficult to excavate due to the presence of tree roots.

#### DISTRIBUTION

Western Australian and Northern Territory.

#### *Lycosa clara* L. Koch 1877 (Fig. 3A-L)

*Lycosa clara* L. Koch, 1877, pp. 912-14, pl. 79, figs. 1, 1a, 1b, Bowen, Queensland; Rainbow, 1911, p. 266; Rack, 1961, p. 37; McKay, 1973, p. 379.

*Allocosa clara*: Roewer, 1954, p. 206; Roewer, 1961, p. 2.

#### MATERIAL EXAMINED

SYNTYPES: British Museum (N.H.), BM 1919. 9.18.219. ♀M, C.L. 8.1 mm, Bowen, Qd. Hamburg Zool. Mus. Inst. No. 14559, Ar. 449, ♀M, Bowen, Qd.

OTHER MATERIAL: Western Australia; Canning Stock Route at Well 46, 13.xii.1971, N.S.E. Exp. IV, 1 ♀M 1 ♀P 9 ♂M, WAM 1 ♂M QM S 46; Maitland R., 23.ii.1962, BYM, 1 ♀M, WAM; Munda, 25.ii.1962, BYM, 1 ♀M 2 ♀P, WAM, 1 ♂M 1 ♂P, WAM; Ord River at Old Lissadell Station, 13.x.1971, RJM, 1 ♀M, WAM.

Northern Territory; near Darwin, 1.vii.1917, G. F. Hill, 2 ♀M 1 ♂P, NM; Harriet Creek 25 km North Pine Creek, 12.ix.1964, A. M. Douglas, 3 ♀M 1 ♂M 9 ♀P 4 ♂P, WAM.

Queensland; Cooloola, 3-7.ii.1976, R. Raven, V. E. Davies, 1 ♀M, QM W5648; Cuddapan turnoff on Birdsville Road, 9.xi.1976, RJM, 1 ♀M, QM W6407; Musgrave Station 10 km east (north of Laura), 3.vi.1973, RJM, 2 ♀M, QM S 47; Peak Downs, 30.xi.1973, RJM, 2 ♀M 7 ♂M, QM W3916; Thargomindah, 27.xii.1974, G. Ingram, 2 ♀M, QM W4670.

## DESCRIPTION (After L. Koch, 1877)

Female. Carapace light yellow-brown with a deeply serrated longitudinal pale yellow marginal band. Lateral declivity yellow-brown with three oval white ring-spots. A white or yellow longitudinal median band, narrow at the posterior declivity, expanded at the median groove, and

extending anteriorly after a short constriction at the cephalic part; immediately behind the eyes the median band narrows but fully covers the interspace between the eyes. Around the PL posteriorly is an orange-yellow half-ring. A white diagonal line at the lateral declivity of the cephalic part. Abdomen yellow-brown with white dots

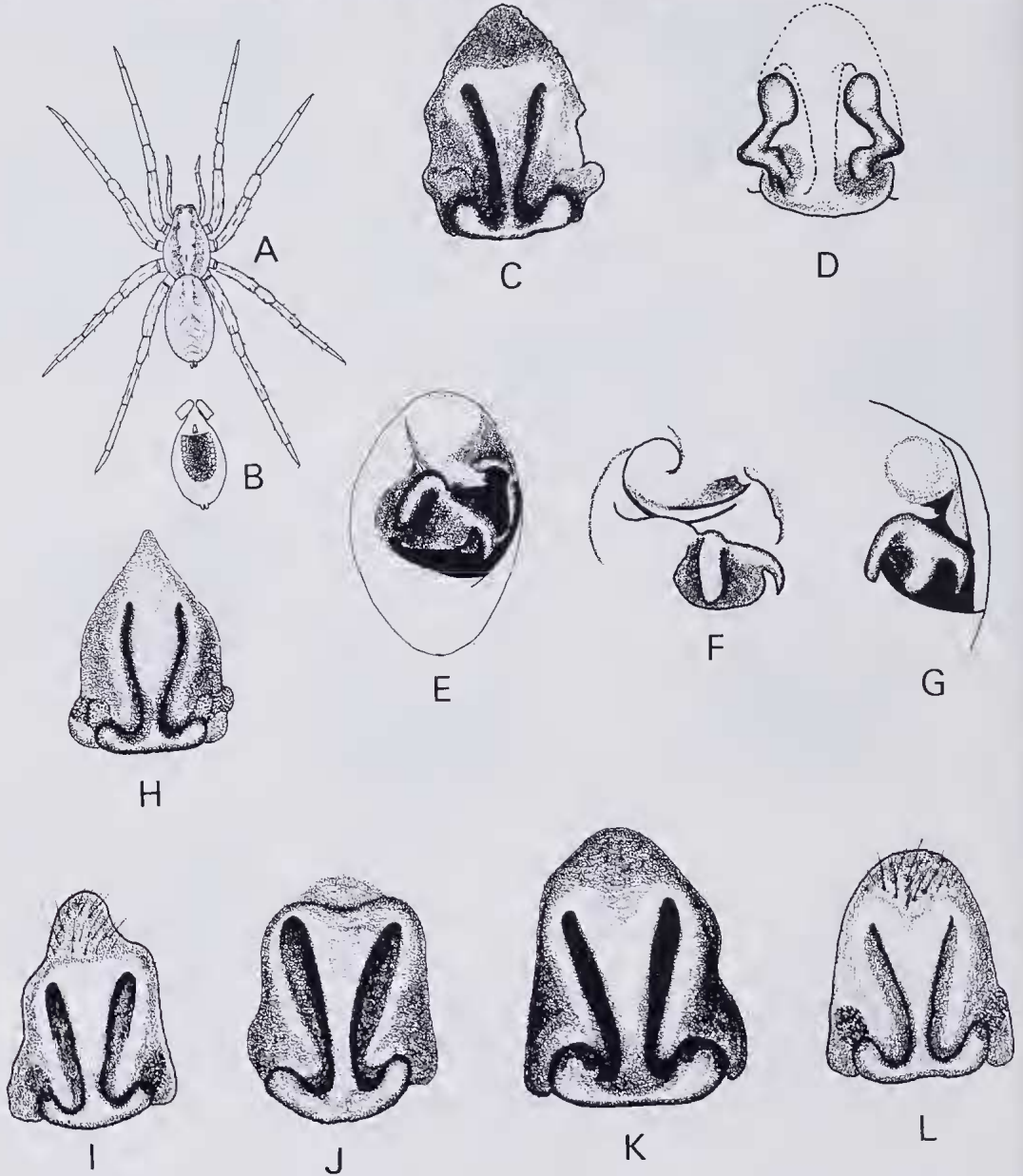


FIG. 3: *Lycosa clara*. A, mature female from Munda, W.A.; B, underside of abdomen; C, epigynum of female from Munda; D, internal genitalia of female from Maitland River; E - G, male palpal organs from Well 46, Canning Stock Route; H, epigynum of syntype from Hamburg Zool. Mus. Inst; I, epigynum of syntype from British Museum; J, K, L, epigyna of females from Peak Downs, near Darwin, and Ord River.

laterally; at the base is a moon-shaped yellow spot followed by a posteriorly notched and white tipped longitudinal yellow spot. More posteriorly is an arcuate white stripe with a series of transverse lines, black anteriorly, and white posteriorly. The sides and undersurface grey, with a black heart-shaped spot behind the epigaster ventrally.

Anterior row of eyes straight, narrower than the second row. AM considerably larger than AL and situated slightly further apart than from the almost adjoining AL. AM less than a radius from the PM. PM very large, less than a radius apart, and less than a diameter from the PL which are also large but considerably smaller than the PM. Legs with a scopula on the metatarsi and tarsi of both anterior pairs. A spine present on the anterior end of patellae 1 and 2, and both anteriorly and posteriorly on patellae III and IV. Two spines anteriorly on femur 1.

VARIATION: Specimens from the Northern Territory and the Ord River, Western Australia have two brown curved marks within the pale longitudinal stripe on the carapace behind the PL eyes. Specimens from Munda and Maitland River, W.A., have the carapace sandy-brown with a pale longitudinal stripe commencing between the PM eyes, filling the ocular quadrangle and constricting between the PL eyes to broaden into a somewhat quadrangular area constricting before the fovea where the lateral margin becomes scalloped and again narrows to the posterior margin; a rather vague pale lateral band is present; sides of carapace with vague radiating brown wedge-shaped markings that are darkest adjacent to the longitudinal stripe and fading laterally; paturon and fang brown; labium and maxillae mid-brown with paler margins; sternum brown with a paler marginal band; coxae light brown. Abdomen pale sandy-brown with an indistinct pattern of darker brown forming the outline of a pale longitudinal stripe on the dorsal midline followed by indistinct brown chevrons (Fig. 3A); undersurface pale sandy-brown with a dark brown to black

shield-shaped spot containing paler spots on the lateral margin (Fig. 3B). Legs pale sandy-brown without markings.

Anterior row of eyes procurved, shorter than the second row; AM larger than AL. Ratio of eyes in micrometer units AM:AL:PM:PL = 16:9:35:28; distance AM-AM 5, AM-AL 4, PM-PM 15, AM-PM 4, AL-PM 6. Clypeus to AM 9. Width of first eye row 60; width of second eye row 80. Eye diameters and interspaces for a syntype and seven specimens are given in Table 6 as a percent of the total width of the first row of eyes. Chelicerae with three promarginal teeth, the outer one small and located near the base of the large median one; three retromarginal teeth of about equal size.

Epigynum elongate, the median guide broad anteriorly and tapering to the transverse guide which is narrow, horizontal and with expanded tips directed anteriorly (Fig. 3C, H, I-L).

TABLE 5: MEASUREMENTS OF LEG SEGMENTS OF  
*L. CLARAIN* MM

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus
1	5.2	3.1	4.3	4.3	2.6
2	5.1	3.0	4.2	4.4	2.5
3	5.0	2.8	3.9	4.7	2.9
4	6.0	3.1	5.4	6.4	3.3

Mature males from Well 46, Canning Stock Route, W.A., have the palpal organ identical to males from Peak Downs, Queensland. One mature male from Harriet Creek, N.T., has the terminal hook on the median apophysis less curved than the above males but is certainly conspecific. The palpal organ of a male from Well 46, Canning Stock Route is figured (Fig. 3E, F, G).

The epigyna of the syntypes from Bowen are illustrated in Fig. 3H, I, with the epigyna of mature females from Peak Downs, Darwin and Ord River (Fig. 3J, K, L).

TABLE 6: EYE DIAMETERS AND INTERSPACES OF *L. CLARA* CONVERTED TO PERCENT OF THE TOTAL WIDTH OF THE FIRST ROW OF EYES

Regd No.	Sex	C.L.	AM	AL	PM	PL	AM:AM	AM:AL	PM:PM	AM:PM	AL:PM
SYNTYPE	♂M	8.1	27	15	60	45	11	5	24	7	8
Munda	♀M	8.6	27	15	58	47	8	7	25	7	10
Munda	♀M	9.7	30	15	54	46	6	3	24	6	10
Maitland R.	♀M	9.5	29	14	56	45	6	3	23	6	9
Well 46	♀M	9.7	29	15	55	45	8	3	24	6	9
Well 46	♂M	7.7	31	15	61	48	4	4	24	6	7
Darwin	♀M	12.1	29	14	57	45	7	4	27	5	9
Peak Downs	♂M	8.2	30	16	56	41	6	4	24	6	7

SIZE RANGE: Mature females C.L. 8.1 to 12.1 mm. Mature males C.L. 6.7 to 8.2 mm.

DIAGNOSIS: A black shield-shaped spot on the ventral surface of the abdomen; epigynum with the median guide expanding anteriorly; male palpal organ with a broad median apophysis carrying a blunt curved dorso-basal hook and a sharp curved dorsolateral hook.

#### LIFE HISTORY

Unknown.

#### HABITAT

Banks of rivers and creeks in northern and inland Australia. Some specimens were collected from open woodlands near creeks at Peak Downs, and two were collected in open woodlands on sandy soil beneath logs near Musgrave Station, north Queensland. This species inhabits sand or sandy loams near permanent or temporary watercourses and swamps.

#### BURROW

Most specimens are found wandering at night and may be found below logs during the daytime. The burrow is unknown.

#### DISTRIBUTION

Queensland, Northern Territory and Western Australia.

#### DISCUSSION

The record of this species from Goolwa, South Australia by Hogg (1905, p. 590) is erroneous as this specimen is *Lycosa spenceri* (Hogg 1900). Specimens from Hermite Island, Montebello Islands, Western Australia, collected by P. D. Montegue, 11–23.viii.1912, (BM.1924.III.1.1018–27) and recorded as *L. clara* by Hogg (1914, p. 88) are *Lycosa meracula* Simon 1909.

#### *Lycosa crispipes* L. Koch, 1877 (Fig. 4A–M)

*Lycosa crispipes* L. Koch, 1877, pp. 923–25, pl. 79, figs. 8, 8a, pl. 80, figs. 1, 1a. Bowen and Rockhampton, Queensland; Karseh, 1878, p. 794, New South Wales; Hogg, 1896, p. 351, Palm Creek, Northern Territory; Rainbow, 1911, p. 266; Rack, 1961, p. 37.

*Hygrolycosa crispipes*: Roewer, 1954, p. 261; McKay, 1973, p. 380.

#### MATERIAL EXAMINED

SYNTYPES: Hamburg Zool. Mus. Inst. No. 14572, Ar. 450 ♂ M, Bowen, Qd; British Museum (N.H.) BM 1919.9.18.222. ♀ M. C.L. 5.0, Bowen, Qd.

OTHER MATERIAL: Western Australia; Argyle Downs homestead pool edge of Behn River, 9.x.1971, RJM, 1 ♀ M, QM W 5058; Barradale at Yannarie River, 13.v.1972, RJM, JG, 1 ♀ M 1J, QM W 5061; Behn River near Ord River, 24.x.1971, RJM, 1 ♀ M 1 ♀ P, QM W 5059; Monsmount at Ord River, 3.x.1971, RJM, 1 ♀ M 2 ♀ M 2 J, WAM 72–161–4; Murehison River at the Loop, 26.i.1969, RJM, JG, P. Snowball, 1 ♀ M 10 J, WAM 69–318–28, 1 ♀ M, WAM 69–441; Murchison River near Highway, 29.i.1969, RJM, JG, P. Snowball, 3 J, WAM 69–457–59; Ord River, 21.x.1971, RJM, 2 ♀ M 2 ♀ M 2 J, WAM 72–155–60; Port Hedland, 10.iv.1972, P. Sadlier, 1 ♀ M, QM W 5062.

Northern Territory: Borroloola 14 km N.W., 3.xii.1974, W. Nash, 1 ♀ M, QM W5105.

Queensland: Allingham Creek, Bluff Downs, N.W. of Charters Towers, 1.v.1974, M. Archer, A. Elliott, 1 ♀ M, QM W 5052; Archer River at crossing, 23–27.v.1973, RJM, V. E. Davies, 4 ♀ M 1 ♀ P 1 ♀ P, QM W 5049, 2 ♀ M 1 ♀ M, QM W 5063; Coen, 3.2 km north, 25.v.1973, RJM, 2 ♀ M 3 ♀ M 4 ♀ P 2 ♀ P 2 J, QM W 50478, Coen, 63 km south, 4.vi.1973, RJM, 1 ♀ M 2 ♀ M 2 J, QM W 5051; Laura River, 10.vi.1973, RJM, 1 ♀ M 1 ♀ P, QM W 5069; Morehead River, 18.v.1973, RJM, V. E. Davies, 3 ♀ M 3 ♀ P 2 ♀ M 1 ♀ P 9 J, QM W 5050; Musgrave Station, 9.vi.1973, RJM, V. E. Davies, 1 ♀ M 5 ♀ P 1 ♀ P 2 J, QM W 5054; Peach Creek near Coen, 25.v.1973, RJM, 1 ♀ M, QM W 5068; Rokeby Station, 30.v.1973, RJM, 1 ♀ P, QM W 5067.

#### DESCRIPTION (After L. Koch, 1877)

Female: Carapace yellow-brown, darkening to black-brown between the eyes. From the posterior margin runs a light longitudinal median stripe covered with white hair at the declivity and with yellow hair above; the stripe continues as far as the PM; lateral margin white; indistinct radiating white stripes on the lateral slope of the thoracic part, and white spots on the lateral convexity of the cephalic part. A transverse white stripe on either side of the AL. Abdomen above and up to half of the lateral convexity olive-brown; a yellow-brown spot gradually broadening posteriorly and forming on either side a sharply projecting denticle runs from the base dorsally and narrows steeply to a truncate margin at its posterior end; on each side of the denticle is a white spot with a white transverse line behind. Posterior part of abdomen with a series of bow-shaped white transverse lines terminating in a white spot. Sides with white dots. Undersurface and lower sides pale yellow. Spinnerets pale yellow with a white spot at upper pair. Palpi yellow-brown, with a white spot at the end of the femur patella and tibia. Legs

yellow-brown with white half rings on the dorsal aspect of the femora; white spots and present on the dorsal end of the femora, tibiae, and tarsi. The patellae of legs I and II with white spots on either side and on the end; the patellae of the posterior legs with two white spots dorsally.

Anterior row of eyes, because of the deep position of the AL, slightly curved; the eyes very close to each other and equidistant. AM considerably smaller than the PL. PM not quite a

diameter apart, and about the same distance from the PL.

Legs with a single long hair on the tibiae and metatarsi. Two spines on the anterior end of femur I.

Male: Carapace light yellow-brown with white hair on the thoracic part and yellow-brown hair on the cephalic part. A median narrow brown-yellow longitudinal stripe commencing at the posterior margin and reaching the PL: at the posterior

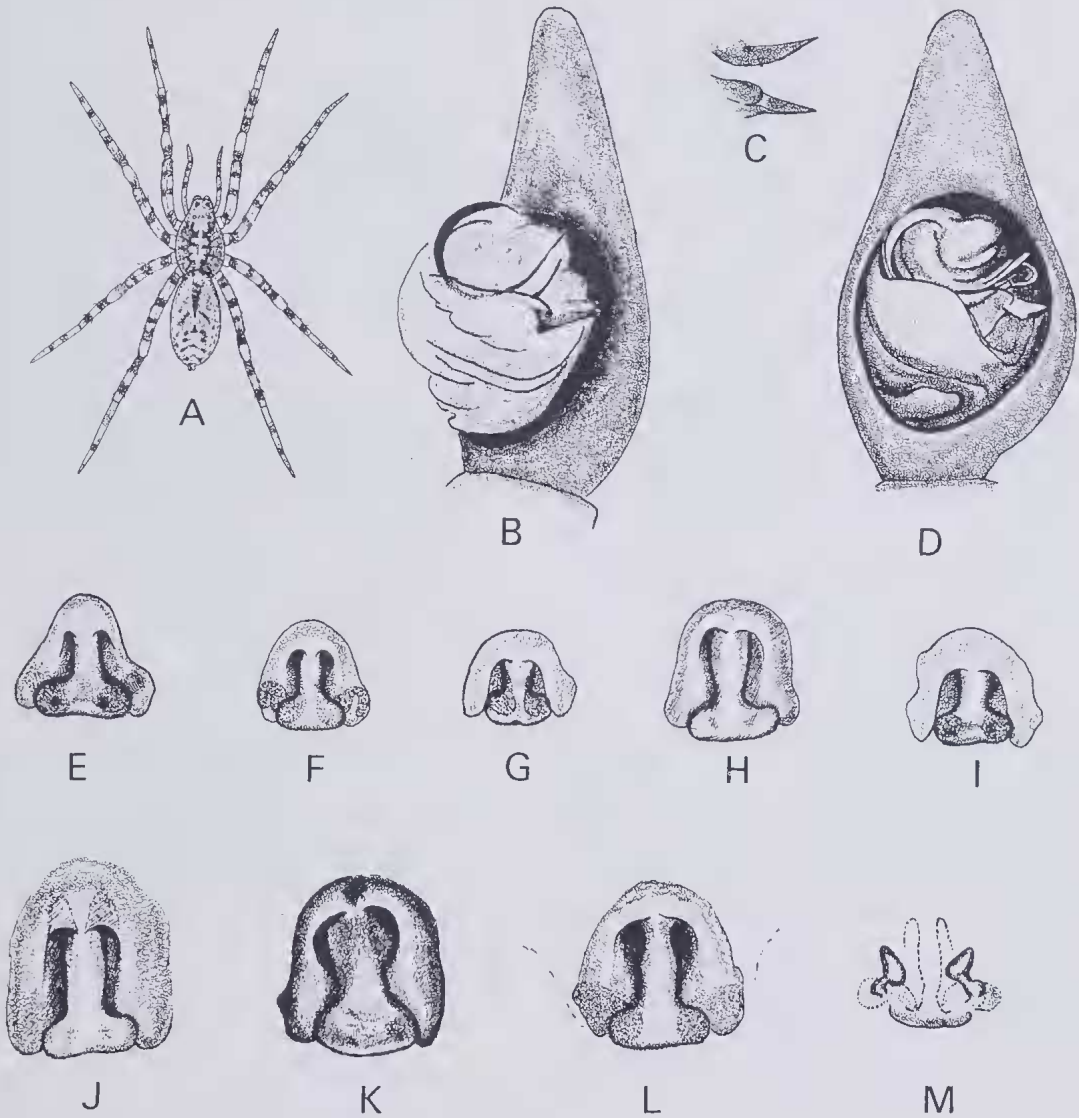


FIG. 4: *Lycosa crispipes*. A, mature female from Laura River, Qd; B, palpal organ of WAM 72-155 expanded; C, embolic guide and median apophysis of a male from Coen; D, palpal organ of WAM 72-155; E, epigynum of syntype from British Museum; F, epigynum of syntype from Hamburg; G, I, L, epigyna of females from Ord River; H, J, epigyna of females from Archer River; K, epigynum of female from Murchison River; M, internal genitalia of female from Behn River.

declivity the stripe is white, and more yellowish anteriorly. Abdomen black above, with a yellowish-brown longitudinal stripe which originates at the base but does not quite reach the middle; a white spot is present on each side of this stripe. At the end of the stripe is a series of transverse bars with a pair of brownish spots in the interspaces. Undersurface and sides yellow-white. Palpi yellowish-brown with the cymbium darker. Legs yellowish-brown ringed with black, the interstices of the rings white.

Anterior row of eyes straight, as wide as the second; AM considerably larger than AL, their distance apart not quite equal to their radius, and closer to the AL than each other; AM more than their radius from the PM. PM about a radius apart and their diameter from the PL.

Legs without scopula; a spine on the anterior end of femur 1; 1 + 1 spines on the tibiae of both posterior pairs; spines on the patellae of all legs.

VARIATION: *Lycosa crispipes* is very variable in coloration and some examples are described.

Coen River: Carapace light brown with an indistinct pale longitudinal stripe and indistinct brown wedge-shaped stripes. Dorsal stripe on abdomen indistinct, some darker diffuse blotches and pale spots on the dorsal surface; sides of abdomen with dark blotches, some of which contain light brown spots. Ventral surface of abdomen with a broad gently tapering longitudinal median brown bar terminating abruptly before the spinnerets; remainder of venter with scattered brown blotches vaguely arranged in a longitudinal line on each side of the median bar. Legs pale brown; femora with two ring-like dark blotches, the distal one widest dorsally, extending obliquely towards the base and then angled sharply forwards and downwards to continue on the ventral surface, the proximal dark band is narrow to absent on the dorsal surface, but expands on the sides, particularly on the retrolateral surface to form a somewhat longitudinal dark streak before continuing to the ventral surface where it completes or almost completes a ring, the base may have an indistinct darker ring present; patellae with the proximal half darker; tibiae with two dark rings, one almost at the middle, the other at the distal end; metatarsi with two faint dark rings; palpal patella with a diffuse dark ring.

Laura River: Carapace with a distinct longitudinal median pale stripe that commences behind the PL eyes and constricts abruptly to form a lobe on each side before continuing as a narrow

band to the foveal region where it again expands to form a trilobate pattern and then tapers to the posterior margin (Fig. 4A). Abdomen with a dark lanceolate median longitudinal stripe anteriorly; some vague dark chevron-like spots posteriorly. Ventral surface of abdomen with a dark longitudinal bar tapering towards the spinnerets; on each side of this bar is a narrow dark brown line from the epigastric furrow to the base of the spinnerets. Legs conspicuously banded (Fig. 4A). Sternum with two brown lines converging posteriorly.

Musgrave Station: Abdomen with the anterior slope dark brown; a horseshoe-shaped pale area with the posterior tips pointed and almost surrounding a somewhat square dark brown spot anteriorly; a pair of brown spots on each side at the middle of the abdomen followed by a pair of brown blotches; sides spotted with brown flecks.

Ord River: A serrated pale marginal band on the carapace commencing before the coxae of the third legs and broadening posteriorly but not meeting at the posterior midline due to an extension of the dark brown carapace. Ventral surface of abdomen a uniform pale sandy-yellow.

Behn River: A longitudinal pale median stripe on the carapace. Legs conspicuously banded.

Murchison River: Carapace with a serrated pale marginal band that continues around the posterior margin. Legs conspicuously banded on the dorsal surface and upper sides only.

Chelicerae with three promarginal teeth, the middle one largest and sometimes joined to the base of the outer tooth; three retromarginal teeth of about equal size. Labium slightly longer than broad.

TABLE 7: MEASUREMENTS OF LEG SEGMENTS OF QM W5047, ♀M, C.L. 7.5 MM, IN MM

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus
1	5.9	2.7	4.6	4.2	2.7
2	5.7	2.6	4.3	4.2	2.7
3	5.3	2.3	4.1	4.6	2.4
4	6.7	2.5	5.3	7.0	2.9

Female epigynum with a short broad median guide and a broad transverse guide. Variation in the shape of the epigyna is shown in Fig. 4E-L.

The male palpal organ with a triangular plough-like median apophysis directed laterally with a dorsal pointed spur at the base; embolic

guide blade-like and gently tapering to a fine point (Fig. 4B, C, D).

Anterior row of eyes with the upper tangent procurved, narrower than the second row, AM larger than AL. Ratio of eyes in micrometer units (QM W5047, ♂M, C.L. 7.5 mm) AM:AL:PM:PL = 12:8:23:17; distance AM-AM 4, AM-AL 2, AM-PM 5, AL-PM 6, PM-PM 13. Clypeus to AM 12. Width of first eye row 47; width of second eye row 57. Eye diameters and interspaces for a syntype and eight specimens are given in Table 8 as a percent of the total width of the first row of eyes.

SIZE RANGE: Mature females C.L. 4.5 to 9.2 mm. Mature males C.L. 6.1 to 7.3 mm.

DIAGNOSIS: Legs conspicuously banded; epigynum with a short broad median and transverse guide; male palpal organ with a triangular pointed median apophysis bearing an upright spur-like point at the base, and a thin tapered embolic guide. Habitat is dry to moist river sands.

#### LIFE HISTORY

Mature females may be collected throughout the year. Mature males have been collected during October in Western Australia and May in Northern Queensland.

Mature females with egg cocoons and carrying young have been taken in May in Queensland, and females carrying young were collected during October in Western Australia. A female from Allingham Creek collected 1 May, 1974, C.L. 6.2 mm had an egg cocoon measuring 6.7 × 7.5 mm containing 221 eggs of 1.0 mm diameter.

#### HABITAT

This species is most abundant on dry sands on the bed of rivers and creeks. Coarse sand to fine gravel may be occupied, and on occasions damp or wet sand, clay-sands, gravel or small pebble

shingle may support small populations. The banks of creeks and lagoons with heavy clay soil are infrequently inhabited by *L. crispipes*. Where large areas of river washed sand is deposited during the dry season the adults may be found well away from pools of water, but juveniles rarely move far from moist sand. The species is difficult to detect on speckled sand during the daytime, and if disturbed, run rapidly.

#### BURROW

A simple open vertical burrow may be excavated in moist sand.

#### DISTRIBUTION

Queensland, Northern Territory and northern Western Australia.

### *Lycosa gibsoni* sp. nov. (Fig. 5A-F)

#### MATERIAL EXAMINED

HOLOTYPE: Western Australian Museum WAM 70-1 ♂M, C.L. 7.7 mm, Millstream Station, Fortesque River, Western Australia, collected by R. J. McKay and R. Dear, 24 September, 1969. In spirit.

PARATYPES: Western Australia; Bamboo Creek, 22.v.1971, A. M. Douglas, 3 ♀P 1 J, WAM 71-1712-15, WAM 71-1846; Dales Gorge, 29.ix.1969, RJM, R. Dear, 1 ♀P, WAM 71-532; Hammersley Gorge, 28.ix.1969, RJM, R. Dear, A. Burbidge, 1 J, WAM 69-1050, 1 ♀P, WAM 70-239; Nullagine, 23.v.1971, A. M. Douglas, 1 ♀P, WAM 71-1855; Pyramid Pool, 5.vi.1970, collector unknown, 1 ♀P, WAM 71-1710; Walgun, east of Ethel Creek, 23.v.1971, A. M. Douglas, 1 J, WAM 71-1711.

#### DESCRIPTION (Based on holotype)

Carapace brown to chocolate brown with some flecks of lighter brown on the margin; a longitudinal median stripe of bright buff hair extends from within the ocular quadrangle, narrows behind the PL eyes and then expands

TABLE 8: EYE DIAMETERS AND INTERSPACES OF *L. CRISPICES* CONVERTED TO PERCENT OF THE TOTAL WIDTH OF THE FIRST ROW OF EYES

Regd. No.	Sex	C.L.	AM	AL	PM	PL	AM:AM	AM:AL	PM:PM	AM:PM	AL:PM
BM 1919.9.18.222	♀M	5.0	23	16	43	36	9	6	26	13	14
QM W5047	♀M	7.5	25	17	49	36	9	4	28	11	13
QM W5048	♀M	6.0	25	15	47	40	6	5	30	15	15
QM W5048	♀M	6.0	25	15	47	40	8	5	30	13	15
QM W5048	♂M	5.7	28	17	50	39	6	6	30	14	17
QM W5054	♀M	5.9	23	15	50	40	7	5	30	13	15
QM W5060	♀M	6.2	25	17	50	42	7	5	26	11	12
QM W5062	♀M	7.4	24	15	52	43	9	5	27	8	10
QM W5105	♀M	6.6	24	19	53	43	8	4	26	10	12

towards the centre of the carapace to continue to the posterior margin as a somewhat serrated band; a faint paler marginal band is present but not obvious, near the posterior extremity of this band is a dark brown to blackish spot; some very faint dark brown stripes radiate out from the centre of the carapace; on the posterior slope of the carapace near the posterior margin on each side of the longitudinal stripe is a dark brown to black

area; face dark brown with a dark stripe between the PM eyes. Paturon dark brown with the anterior surface bright orange basally; labium, maxillae, sternum and ventral surface of anterior coxae jet black; third coxae brown below; fourth coxae orange below. Abdomen orange-brown above with a vague longitudinal lanceolate stripe anteriorly, on each side of which is a buff spot; some rather diffuse dark chevrons posteriorly;

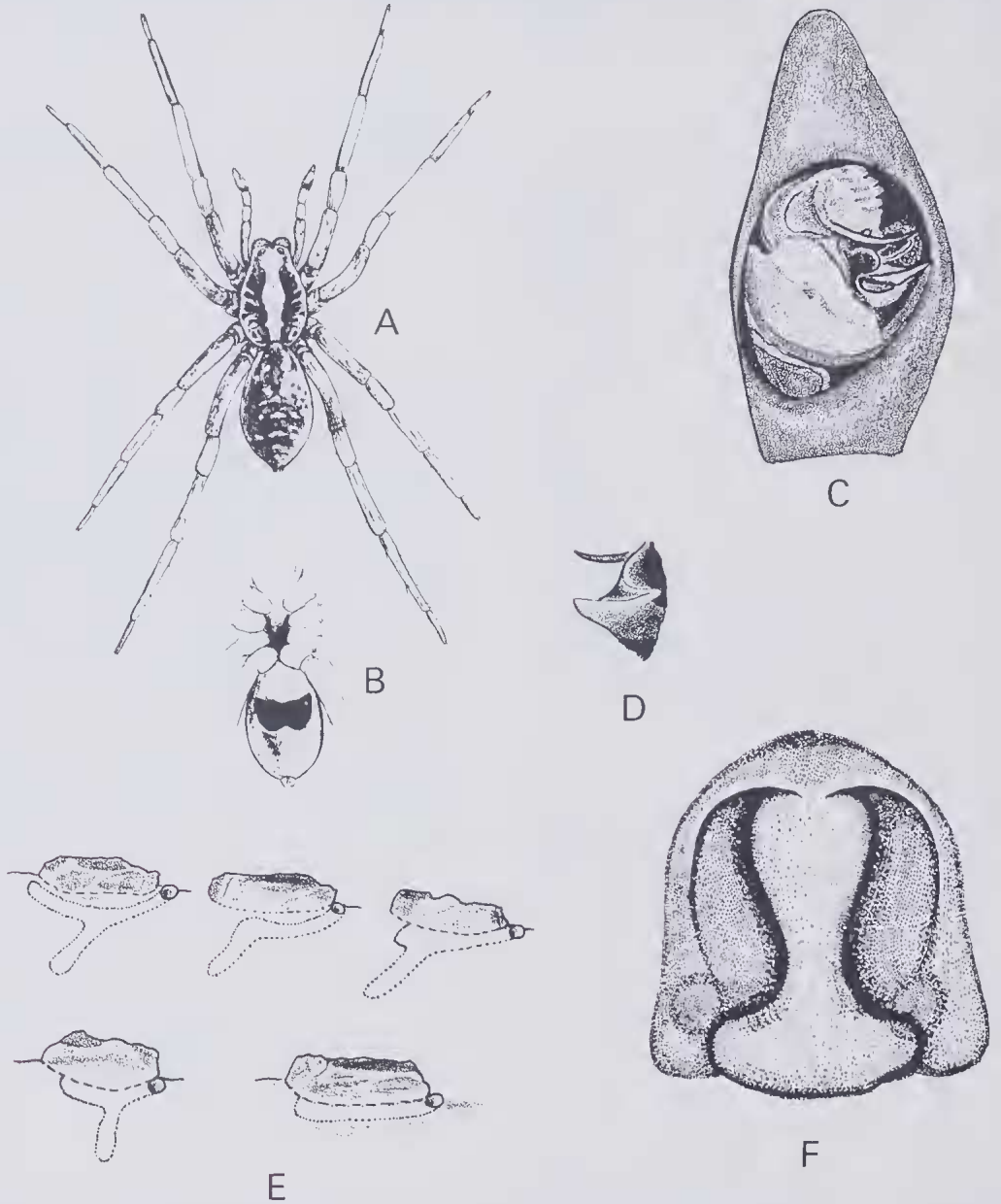


FIG. 5: *Lycosa gibsoni*. A, holotype; B, undersurface of abdomen; C, left palpal organ of holotype; D, embolic guide and median apophysis of right palpal organ of holotype; E, burrows of *L. gibsoni*; F, epigynum of female.



sides brown with flecks of bright orange; ventral surface bright orange with a black lobate transverse shield-shaped spot commencing at the epigastric furrow and reaching almost half-way to the spinnerets. Legs dark brown to black below, femora dark brown tinged with orange above; patellae, tibiae, metatarsi and tarsi ash-grey above.

Anterior row of eyes procurved, shorter than the second row; AM larger than AL. Ratio of eyes in micrometer units AM:AL:PM:PL = 10:8:31:22; distance AM-AM 5, AM-AL 5, PM-PM 13, AM-PM 5, AL-PM 6. Clypeus to AM 5. Width of first eye row 50; width of second eye row 72.

Chelicerae with three promarginal teeth on the right side, the outer two joined at the base, two promarginal teeth on the left side, the outer one largest; three retromarginal teeth on each side, the middle one largest.

Male palpal organ with a somewhat triangular median apophysis, the upper crest recurved to the rear of the laterally directed blade; embolic guide slender and pointed (Fig. 5C, D).

Chelicerae with three promarginal teeth in females, the middle one largest.

Epigynum horseshoe-shaped with the median guide widest anteriorly and a robust transverse guide (Fig. 5F).

The eye diameters and interspaces of the holotype and two paratypes are given as a percent of the total width of the first row of eyes in Table 10.

SIZE RANGE: Mature females C.L. 8.3 to over 12.3 mm. Mature male C.L. 7.7 mm.

DIAGNOSIS: Ventral surface of abdomen bright orange with a jet black shield-shaped spot behind the epigastric furrow. Male palpal organ with the dorsal crest recurved to the rear of the laterally directed blade; embolic guide slender and pointed.

LIFE HISTORY

Mature males and females were not collected. A penultimate female and penultimate male collected during September were maintained in the laboratory until mature.

HABITAT

At Millstream this species was found below trees with burrows adjacent to tree roots in softer soils or below stones. Hammersley Gorge specimens were captured from open rock and spinifex. The spiders are very agile among rocks and crouch next to rocks or move head first into crevasses between broken angular rocks. They are abundant in areas of shattered ironstone rock. At Bamboo Creek the habitat was shattered rock piles.

BURROW

A rather shallow burrow is constructed adjacent to tree roots in soft soils, but in stony areas a shallow burrow is constructed below large slabs of stones or small pieces of stone surrounded by very compact soil (Fig. 5E). On rock piles this species may shelter well within the stone fragments and be exceedingly difficult to capture.

TABLE 9: MEASUREMENTS OF LEG SEGMENTS OF *L. GIBSONI* IN MM

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus
1	6.1	3.2	5.2	5.0	2.5
2	5.6	3.1	4.5	4.5	2.3
3	5.2	2.5	3.7	4.3	2.0
4	6.7	2.9	5.2	6.6	2.6

VARIATION: Juveniles below C.L. 2.8 mm have the ventral surface of the abdomen orange, at C.L. 3.1 to 3.4 mm a thin black transverse bar appears, and at C.L. 4.5 mm this bar is widening until at C.L. 5.5 mm the black field is fully developed in females. The longitudinal stripe on the carapace may be cream to bright buff in colour, straight, with parallel sides or scalloped around the fovea. The margin of the carapace may have scattered dark brown spots or blotches and some radiating dark brown and cream lines may cross the lateral slopes. The fourth tibiae is black-brown below, sometimes with an ash-grey spot in the middle.

TABLE 10: EYE DIAMETERS AND INTERSPACES OF *L. GIBSONI* CONVERTED TO PERCENT OF THE TOTAL WIDTH OF THE FIRST ROW OF EYES

Regd. No.	Sex	C.L.	AM	AL	PM	PL	AM:AM	AM:AL	PM:PM	AM:PM	AL:PM
HOLOTYPE	♂M	7.2	20	16	62	44	10	10	26	10	12
WAM 70-239	♀M	8.3	22	15	61	49	5	7	20	7	9
WAM 71-1846	♀P	12.2	23	16	59	51	9	7	29	13	18

## DERIVATION

Named after Alfred Gibson the member of Ernest Giles' expedition who disappeared in 1874 in the desert that now bears his name.

*Lycosa koyuga* sp. nov.  
(Fig. 6A-H)

## MATERIAL EXAMINED

HOLOTYPE: Western Australian Museum WAM 71-1968, ♀ M, C.L. 11.2 mm, Guilderton, Moore River, W.A., collected by R. J. McKay, 12.xii.1971. In spirit.

PARATYPES: Fitzgerald River, W.A., 16.vii.1970, AB, 3 ♀ M WAM 70-183-5, 4 ♀ M, WAM 71-48-51; Guilderton, Moore River, W.A., 12.xii.1971, RJM, 8 ♀ M, 4 ♀ P, 1 ♂ M WAM 71-1957-67, WAM 71-1969-75; Moore River National Park, 5.ii.1971, N. McKenzie, 2 ♀ M, WAM 71-743-4; Manganooka, 14 km SSW Coorow, W.A., 22.xi.1970, AB, 1 ♀ M, WAM 71-189; Pingrup, 27 km east at Greenshields Soak, W.A., 30.iii.1971, J. Ingram, T. Evans, 3 ♀ M, WAM 71-1748-50; Queen Victoria Springs, W.A., 2.x.1956, A. R. Main, 1 ♀ M, WAM 69-809; 29 km W of Southern Cross, W.A., 26.i.1968, L. Smith, N. Allen, 1 ♀ M WAM 69-806; Yanchep Beach, W.A., 2.i.1970, P. G. and G. W. Kendrick, 1 ♀ M, WAM 71-1751.

## DESCRIPTION (Based on the holotype)

Carapace mid-brown with a light grey-fawn longitudinal stripe commencing behind the PM eyes, filling the ocular quadrangle and broadening behind the PL eyes to constrict before the fovea to form a diamond shape surrounding the fovea and narrowing to the posterior margin; within the broad longitudinal stripe before the foveal constriction are two dark marks laterally; a greyish marginal band merges into a bright buff premarginal band that has the upper edge sharply defined from the brown sides of the carapace and sharply serrated or scalloped; radiating fine dark brown marks are visible on the lateral slopes after preservation and some similar pale yellow marks are present in life; paturon black with the base buff or pale fawn; lateral condyles small and dark brown; labium, maxillae, sternum and undersurface of coxae jet black. Abdomen pale brown above with a conspicuous dark brown anterior longitudinal stripe with oblique brown stripes extending out from the middle and the posterior corners; four pale yellow chevrons outlined by brown spots and a fine brown dusting extend transversely and are arranged posteriorly, sides of abdomen finely spotted and speckled with brown; undersurface buff with a broad jet black field having a rounded posterior margin that commences at the epigastric furrow and extends

posteriorly to before the spinnerets. Legs and palpi yellowish, the tips of the femora and patellae black-brown, tips of the tibiae dark brown, remainder of leg black-brown below; palpal femur with 2 brown rings.

Anterior row of eyes procurved, AM larger than AL. Ratio of eyes AM:AL:PM:PL = 20:12:46:42; distance of AM-AM 8, AM-AL 6, AM-PM 9, AL-PM 11, PM-PM 24. Clypeus to AM 15. Length of first eye row 80, length of second eye row 110.

Chelicerae with three promarginal teeth, the middle one largest; three retromarginal teeth of about equal size. Labium longer than wide.

Epigynum with a flattened and ill-defined median guide; the transverse guide raised and horseshoe-shaped with recurved ends (Fig. 6D).

TABLE 11: MEASUREMENTS OF LEG SEGMENTS OF *L. KOYUGA* IN MM

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus
1	8.3	4.0	6.2	6.2	3.3
2	8.0	3.7	6.1	6.3	3.4
3	7.8	3.5	5.5	6.7	3.4
4	9.7	3.7	7.4	9.6	4.2
Palp	3.8	1.9	2.1	—	3.2

VARIATION: The carapace may have a vague Union Jack-like pattern of dark brown elongate radiating wedges preceded by narrow white or cream stripes on each side of the longitudinal median stripe; the black field on the venter of the abdomen may almost touch the base of the spinnerets in some adults and fall far short of the spinnerets in others.

The eye diameters and interspaces of the holotype and nine paratypes are given as a percent of the total width of the first row of eyes in Table 12. The first row of eyes is always shorter than the second row. In one mature female WAM 71-1970 the left side AM eye is larger than the right AM in the ratio of 20:18 and the right PM eye is larger than the left PM in the ratio 43:46, in all other specimens the diameters of the AM and PM eyes are normal.

Variation in the shape of the epigynum may be quite marked and two paratype females are illustrated (Fig. 6C, G), the internal genitalia of one paratype female is illustrated (Fig. 6H). The male palpal organ is shown in Fig. 6E, F. The median apophysis is a flat rounded plate with a small projecting spine on the anterior inner edge and the lower corner is doubled over somewhat like the cover of a book; the membranous

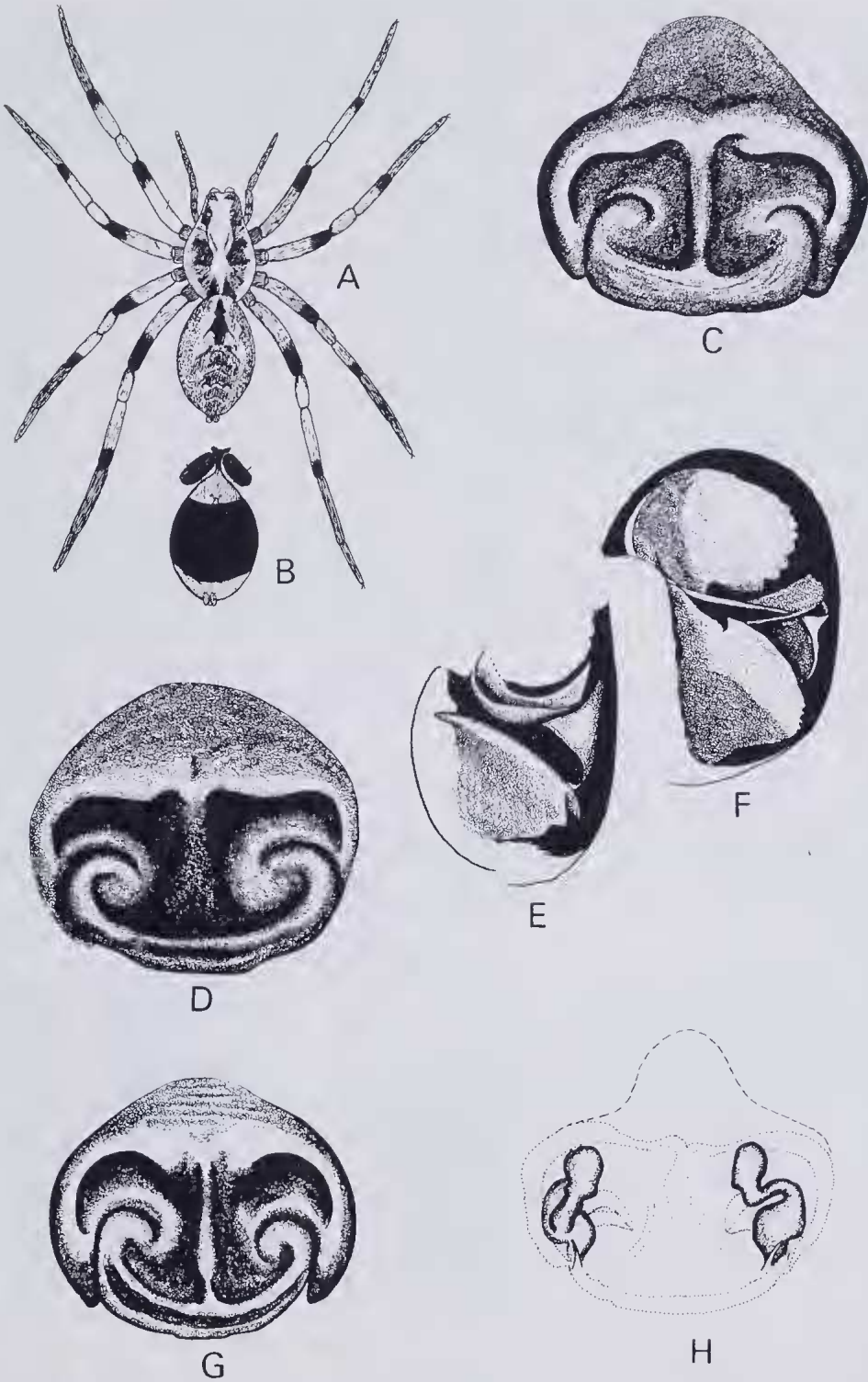


FIG. 6: *Lycosa koyuga*. A, holotype; B, undersurface of abdomen; C, epigynum of WAM 69-806; D, epigynum of holotype; E-F, male palpal organ; G, epigynum of WAM 71-48; H, internal genitalia of WAM 71-743.

secondary conductor is pointed and curled inwards, and the embolic guide, lying above the embolus, is a deep scoop-shaped structure with a flattened and slightly recurved tip. The median apophysis appears to be quite distinctive in shape and facilitates identification of the male of this species.

SIZE RANGE: Mature females C.L. 8.5 to 11.2 mm. Mature male C.L. 9.3 mm.

DIAGNOSIS: *Lycosa koyuga* has a characteristic epigynum and coloration. The jet black area on the undersurface of the abdomen and the dark brown to black tips on the femora and tibiae provide easy identification in the field.

#### LIFE HISTORY

Largely unknown; mature females are present during the summer months and mature males are found on coastal sand dunes during December.

#### HABITAT

All specimens were taken on sandplain areas inland and on or near coastal sand dunes. Yellow sandy soils with spinifex, Mallee *Eucalyptus pyriformis*, *Hakea*, *Caesuarina*, and various *Acacia* species in the inland areas, and on coastal sandplain the habitat is largely *Eucalyptus tetragona*, *Banksia* or heathlands; the species is frequently abundant when these areas have been recently burnt.

#### BURROW

Unknown. All specimens were found wandering on open sandplain or sheltering below coastal dune bushes at night.

#### DERIVATION

From the aboriginal "koyuga" meaning plain surrounded by forest.

*Lycosa maini* sp. nov.  
(Fig. 7A-E)

#### MATERIAL EXAMINED

HOLOTYPE: Western Australian Museum WAM 69-115, ♀M, C.L. 7.7 mm, 88 km north of Murchison River, W.A. on red soil with Mulga *Acacia* sp., collected by R. J. McKay, 30 January 1969. In spirit.

PARATYPES: Billabong Roadhouse near Shark Bay turnoff, 3 km south, 12.v.1972, RJM, 1 ♂J, QM W 4668; Menzies, 6 km north, 1.ix.1954, BYM, 1 J, WAM 68-821; Mt. Magnet area, 7-8.xii.1968, RJM, JG, J. Ayres, 1 ♀P, WAM 69-1031, 1 ♀P, WAM 69-1036; Murchison River, 19 km north, 20.ii.1962, A. R. Main, 1 J, WAM 68-820; Norseman, 76 km north, 26.xii.1968, W. H. Butler, WAM 69-105-6; Paynes Find, 61 km west, 8.xii.1968, RJM, JG, P. Snowball, 1 J, WAM 68-819; Tarin Rock Reserve, 22.v.1971, AB, 1 J, WAM 71-1859; Wubin, 32 km northeast, 14.vii.1968, RJM, JG, J. Ayres, 1 ♂P 1 ♀P, WAM 68-817-8.

#### DESCRIPTION (Based on the holotype)

Carapace uniform black with a green-brown to bronze-green sheen; paturon and fangs black; lateral condyle dark brown; labium and maxillae black; sternum and coxae black with a dull bronze-green sheen. Abdomen black with a bronze-green sheen above, black-brown below; on the dorsal surface is an anterior wide fawn arcuate transverse bar with ill-defined margin; a pair of fawn spots towards the centre of the abdomen closely followed by a fawn chevron and about three paler fawn chevrons more posteriorly. Legs black-brown.

Anterior row of eyes with the upper tangent procurved, shorter than second row, AM larger than AL. Ratio of eyes AM:AL:PM:PL = 19:15:44:31; distance AM-AM 9, AM-AL 5,

TABLE 12: EYE DIAMETERS AND INTERSPACES OF *LYCOSA KOYUGA* CONVERTED TO PERCENT OF THE TOTAL WIDTH OF THE FIRST ROW OF EYES

Regd. No.	Sex	C.L.	AM	AL	PM	PL	AM:AM	AM:AL	PM:PM	AM:PM	AL:PM
HOLOTYPE	♀M	11.2	25	15	58	53	10	8	30	11	14
WAM 71-1957	♀M	10.0	24	15	58	51	11	7	27	11	12
WAM 71-1964	♀M	10.5	24	15	57	50	11	7	30	15	16
WAM 71-1965	♀M	10.4	24	15	55	48	11	7	29	11	15
WAM 71-1966	♂M	9.3	24	16	60	49	11	6	32	13	14
WAM 71-1970	♀M	10.2	24	16	58	54	8	5	35	13	12
WAM 71-1971	♀M	10.5	24	16	58	55	9	7	30	11	14
WAM 71-1972	♀M	10.2	25	16	60	48	9	7	29	11	13
WAM 71-1973	♀M	10.6	24	16	59	50	11	8	28	11	13
WAM 71-1974	♀M	10.3	25	15	60	51	10	6	27	11	15

AM-PM 8, AL-PM 12, PM-PM 14. Clypeus to AM 12. Length of first eye row 88, length of second eye row 98.

Chelicerae with three promarginal teeth, the middle one largest; three retromarginal teeth of equal size. Labium slightly longer than broad.

TABLE 13: MEASUREMENTS OF LEG SEGMENTS OF *L. MAINI* IN MM

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus
1	5.4	2.7	4.1	4.1	2.1
2	5.0	2.2	3.7	3.7	2.0
3	4.3	2.2	2.9	3.9	1.9
4	5.8	2.6	5.1	6.9	2.5
Palp	2.7	1.5	1.9	—	2.4

Epigynum with a short reduced median guide and a broad curved transverse guide (Fig. 7C).

VARIATION: Juveniles are similar to adults in coloration but may have the fawn to yellow chevrons on the abdomen much brighter and more distinct. Adults vary slightly in colour pattern, some specimens may have a yellow or orange-bronze longitudinal median stripe on the carapace and a dull orange to yellow indistinct lateral band;

black lines or broad wedges may radiate out from the centre of the carapace after preservation, but are not obvious in life; some specimens have a collar-like ring of black hairs extending from the anterior ventral corners of the carapace around behind the PL eyes. The abdomen may have a distinct or quite diffuse pale fawn to yellow-gold bar across the anterior part of the dorsal surface followed by a pair of yellow to orange spots about one third the length of the abdomen and more posteriorly 5 to 6 yellow-orange chevrons decreasing in size; occasional specimens have a faint short longitudinal stripe on the anterior dorsal surface. Legs may be uniform bronze-green to blackish with or without black rings on the extremities of the femora, occasionally on the patella and on the remaining leg segments. Penultimate males are similar to females in coloration.

The male palpal organ and the internal genitalia of the female is at present unknown; the holotype female was not dissected.

Variation in the eye diameters and interspaces is given in Table 14 as a percent of the total width of the first eye row.

SIZE RANGE: Mature females may not exceed C.L. 8.0 mm.

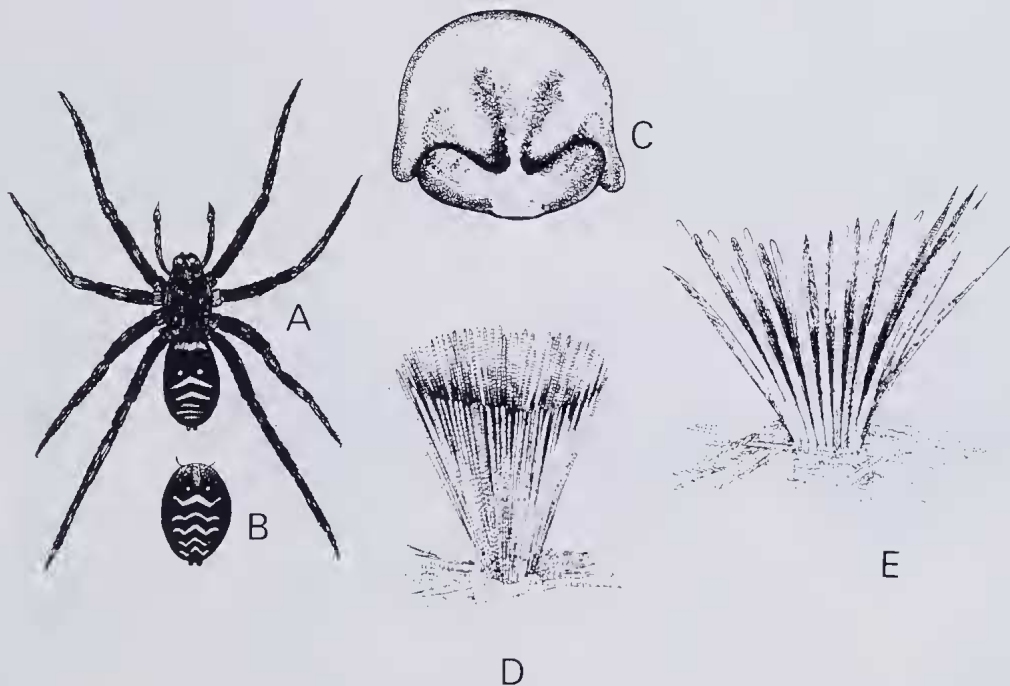


FIG. 7: *Lycosa maini*. A, penultimate male from N.E. of Wubin; B, abdomen of WAM 69-1036; C, epigynum of holotype; D, E, palisade burrows.

DIAGNOSIS: A small species inhabiting burrows with a high palisade of narrow leaves. Dark brown to jet black with a bronze-green sheen and yellow, orange or gold chevrons on the abdomen. Epigynum with a very reduced median guide.

#### LIFE HISTORY

Females probably mature in the summer months. Mature males have not been collected.

#### HABITAT

The holotype was collected in red clay-loam soil below Mulga trees. At Wubin red sandy-loam soils with a shallow hardpan layer below Mulga trees had some occupied and many vacant burrows. At Mt Magnet *L. maini* was common in red soils below Mulga, and again at Paynes Find and northeast of Wubin, but half-way between Wubin and Paynes Find a large area of similar habitat was searched without success, although in Mallee or Jam thickets with loose yellow-buff fine sandy soils this species was common.

#### BURROW

The burrow of *Lycosa maini* is very distinctive (Fig. 7D, E). A large number of elongate narrow Mulga leaves or phyllodes, the 'linear litter' of Main (1957), are webbed to the top of the burrow entrance with the base of the leaf within the burrow, and the remainder almost vertical to form a high palisade somewhat resembling a shuttlecock in shape. The palisade is securely webbed into a strong structure that projects high above the thick mat of thin leaves that builds up under Mulga *Acacia aneura* or dry adapted *Acacias* in the region of Western Australia receiving between 100 and 300 mm annual rainfall. On occasions the broader leaves of Jam trees may be used to form the palisade which is frequently lower than the linear litter structures. The opening of the burrow at the base of the palisade varies from 8 to 20 mm; normally 12 mm; the burrow then enlarges to form a chamber over twice the diameter of the entrance, measuring between 20 and 40 mm,

before constricting to the diameter of the entrance and continuing vertically downwards to a depth of 15 to 23 cm.

All burrows were constructed in heavy leaf litter below shrubs and trees and appeared to favour the side of the tree where the afternoon shade fell. One wall of the palisade is frequently more vertical than the opposite side and adjacent burrows may have the vertical side facing the same direction, although insufficient burrows were examined to substantiate the few isolated observations made at Wubin and Mt. Magnet.

Two specimens, a penultimate male and a penultimate female from Wubin, were maintained in the laboratory and supplied with well compacted red soils and scattered piles of Mulga leaves. During the night both specimens built a typical high palisade around the burrow entrance. The male appeared to have a more vertical palisade than the female who built one wall almost vertical and the opposite half of the palisade leaning out a little more to form an angled platform area where she normally remained in wait for prey. When the leaves of the palisade were gently disturbed by introduced mealworms, the female would vacate the palisade and capture the prey, consuming it outside. In the laboratory both specimens would leave the palisade to hunt nearby, but when disturbed, would retreat within the palisade very rapidly, and would not re-emerge for hours. Both palisades were destroyed 2 months after their construction in the laboratory in an attempt to witness their reconstruction; the palisades were rebuilt but were not as symmetrical nor as elaborate as those in the field and first constructed in the laboratory two days after the spiders were collected. Both laboratory specimens died three months after capture, before attaining maturity.

#### DISCUSSION

This species is the 'shuttlecock spider' of Main (1976, pp. 142-3, fig. 37G).

TABLE 14: EYE DIAMETERS AND INTERSPACES OF *LYCOSA MAINI* CONVERTED TO PERCENT OF THE TOTAL WIDTH OF THE FIRST ROW OF EYES

Regd No.	Sex	C.L.	AM	AL	PM	PL	AM:AM	AM:AL	PM:PM	AM:PM	AL:PM
HOLOTYPE	♀M	7.7	22	17	50	35	10	6	16	9	14
WAM 69-1036	♀P	6.5	20	12	47	39	10	10	25	10	14
WAM 69-1031	♀P	6.4	24	16	48	41	8	7	24	11	11
WAM 68-817	♀P	7.3	23	15	55	37	10	9	16	8	16
WAM 68-818	♂P	6.0	23	19	55	39	9	6	17	13	16

## DERIVATION

Named after Dr Barbara York Main in recognition of her studies on Australian spiders and her large collection of lycosid spiders donated to the Western Australian Museum to form the basis of the present revision of the Australian Wolf Spiders.

*Lycosa marcentior* Simon, 1909  
(Fig. 8A–D)

*Lycosa marcentior* Simon, 1909, p. 185, fig. 3, Dongarra (= Dongara) and Boyanup, Western Australia; Rack, 1961, p. 38; McKay, 1973, p. 379.

*Lycosa marcentior* (misspelt): Rainbow, 1911, p. 270.  
*Hogna marcentior*: Roewer, 1954, p. 253.

## MATERIAL EXAMINED

SYNTYPE: Hamburg Zool. Mus. Inst. No. 466, Juvenile, 'Dongarra, Hamb. S.W. Austral. Exp. 1905, 84, Duncnbusch, 17.vii.1905'.

## OTHER MATERIAL

Desperate Bay, south of Dongara, W.A., 27.ii.1971, RJM, B. Ryle, 4 ♀M, WAM 71-1262-65, 1 ♀M 1 ♀J, QM S50; Dongara, 5.vii.1971, RJM, 1 J, WAM 71-1998.

## DESCRIPTION (Based on WAM 71-1262-65)

Carapace sandy-brown to dark brown with a pale longitudinal median stripe commencing within the ocular quadrangle as a diamond-shaped area narrowing between the PL eyes and abruptly expanding into a quadrangular or oval-shaped area before becoming scalloped laterally and narrowing to the posterior margin; the longitudinal stripe has a thin brown line commencing between the PM eyes and continuing down the middle of the pale longitudinal stripe to well

posterior of the PL eyes to almost reach the centre of the carapace; on each side of this narrow brown line within the rectangular or oval-shaped area behind the PL eyes is a lunate shaped longitudinal spot that may continue faintly forwards to join the brown line forming an elongate somewhat diamond-shaped mark open posteriorly; a lateral pale marginal band, somewhat serrated on the upper margin, has some scattered dark brown spots around the middle of the band or along its entire length; some dark brown wedge-shaped marks radiate out from the foveal region across the brown lateral slopes; paturon dark brown to black; labium and maxillae dark brown with pale anterior margins; sternum dark brown to black; ventral surface of coxae brown. Abdomen light brown with an indistinct dark brown longitudinal stripe broken up into dark chevrons posteriorly and surrounded by a lighter area anteriorly and laterally; upper sides flecked with dark brown, lower sides pale brown to sandy-yellow; ventral surface sandy-yellow with a distinct jet black or indistinct dusky somewhat quadrangular or shield-shaped spot commencing at the epigastric furrow and reaching about half-way to the spinnerets. Legs sandy-brown with or without dark brown, dusty-brown or greyish rings.

Anterior row of eyes procurved, narrower than the second row; AM larger than AL. Ratio of eyes of WAM 71-1264 in micrometer units AM:AL:PM:PL=13:7:30:25; distance AM-AM 7, AM-AL 3.5, AM-PM 4, AL-PM 4, PM-PM 18. Clypeus to AM 7. Width of first eye row 53; width of second eye row 74.

Chelicerae with 3 promarginal teeth, the middle one largest; three retromarginal teeth of about equal size.

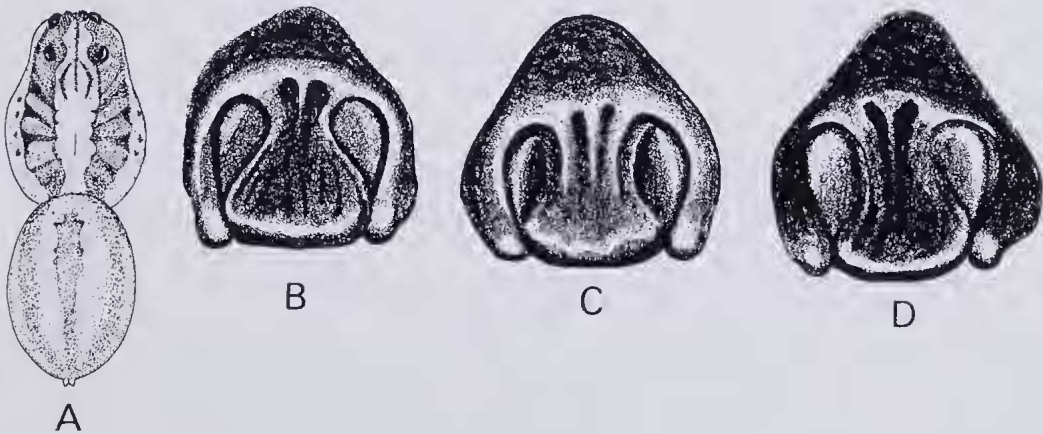


FIG. 8: *Lycosa marcentior*. A, mature female WAM 71-1265; B, C, D, epigyna of females WAM 71-1262, WAM 71-1263, WAM 71-1265.

TABLE 15: MEASUREMENTS OF LEG SEGMENTS OF *L. MARCENTIOR* (WAM 71-1264) IN MM

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus
1	4.5	2.5	3.4	3.4	2.0
2	4.3	2.5	3.2	3.3	2.0
3	4.1	2.2	2.9	3.5	1.9
4	5.3	2.5	4.1	5.7	2.4

VARIATION: The syntype from Dongara is quite pale and has traces of the longitudinal median stripe on the carapace. The abdomen is darker with a longitudinal dorsal stripe outlined in dark brown anteriorly, faint posteriorly. A faint series of brown wedge-shaped stripes are present on the carapace. The retromarginal teeth in this juvenile are 2+2; promarginal teeth 3+3 close together, the median largest. No mature female syntype was available for study, but the female genitalia of specimens from Deception Bay (Fig. 8B-D) agree quite well with Simon's description but have the anterior epigynal furrows much less divergent than in Simon (1909, fig. 3).

Eye diameters and interspaces of four mature females are given in Table 16 as a percent of the total width of the first eye row.

SIZE RANGE: Mature females C.L. 6.8 to 7.1 mm.

#### DIAGNOSIS

Mature females with a black spot on the ventral surface of the abdomen and a characteristic epigynum.

#### LIFE HISTORY

Mature females captured on 27 January, laid egg-cocoons during March and April in the laboratory (Table 17). Ova measured 1.0 - 1.2 mm in diameter.

Mature males were not collected despite a careful search. This species was not abundant at Desperate Bay or Dongara, and may be an uncommon species on the Swan coastal plain.

TABLE 17: NUMBER OF EGGS IN THE COCOONS OF *LYCOSA MARCENTIOR*

Date	♀ C.L.	Egg Cocoon	Number of eggs
21.iii.1971	7.0	7.3 × 5.8 mm	168
21.iii.1971	7.1	8.2 × 6.5 mm	196
29.iii.1971	7.1	5.6 × 5.5 mm	120
5.iv.1971	6.8	6.5 × 7.5 mm	171

Adult females may have been sheltering within burrows during January to April.

#### HABITAT

Near the beach on white sands near dune plants, litter, grassed areas or below dune bushes in dry leaf litter. This species can be found well behind the coastal dunes on sandy soils or clay-sand soil below trees. Juveniles were observed in grassed areas and the majority were found off the ground on grass stems, grass clumps, and on low bushes as if to escape predation.

#### BURROW

Adults were found wandering or sheltering below leaf litter. No burrows were observed in the field although adult females were disturbed and followed for some distance in the hope that they would seek the burrow to escape harassment. In the laboratory gravid females constructed a burrow with a very low mound some 8.5 cm deep in the moist sand, and webbed litter and sand grains over the entrance; once completed, the burrow was impossible to locate without disturbing the surface.

#### *Lycosa meracula* Simon, 1909 (Fig. 9A-K)

*Lycosa meracula* Simon, 1909, pp. 190-1, Denham and 'Albany'. Western Australia; Rainbow, 1911, p. 270; Bonnet, 1957, p. 2652; Rack, 1961, p. 38.

[Not] *Lycosa clara*: Hogg, 1914, p. 88.

*Tetrallycosa meracula*: Roewer, 1954, p. 296; Roewer, 1960, p. 949.

*Lycorma meracula*: McKay, 1973, p. 380.

TABLE 16: EYE DIAMETERS AND INTERSPACES OF *L. MARCENTIOR* CONVERTED TO PERCENT OF THE TOTAL WIDTH OF THE FIRST ROW OF EYES

Regd No.	Sex	C.L.	AM	AL	PM	PL	AM:AM	AM:AL	PM:PM	AM:PM	AL:PM
WAM 71-1264	♀M	7.1	25	13	57	47	13	7	34	8	8
WAM 71-1262	♀M	7.1	25	14	63	53	12	5	29	6	8
WAM 71-1263	♀M	6.8	24	14	60	52	14	6	30	7	7
WAM 71-1265	♀M	7.0	24	14	59	51	14	6	33	8	9



## MATERIAL EXAMINED

PARATYPES: One immature female, C.L. 3.5 mm, Hamburg Zool. Mus. Inst., No. 467, labelled 'Hambg. S.W. Austral. Exp. 1905, 65 Denham, 9-11.vi, *Lycosa meracula* ES'. One immature specimen C.L. 2.7 mm, Western Australian Museum, previously dried and pinned, labelled 'Hambg. S.W. Austral. Exp. 1905, 5 Shark Bay Denham, Ebbestrand, 20.vi'.

OTHER MATERIAL: Western Australia; Barrow Island, 23.v.1968, HB, WAM 69-366-7, 31.iii.1971, HB, WAM 71-1812-19, WAM 71-1807-11, 21-25.viii.1973, L. A. Smith, WAM; Bernier Island, 16.iv.1969, J. Bannister, WAM 70-173-7; Carrarang Station, False Entrance, Shark Bay, AB, QM S49; Dorre Island, 20.iv.1969, J. Bannister WAM 70-178-9; Maud Landing, 20.v.1968, JG, WAM 70-64-76, WAM 69-96, 7-12.vii.1971, B. & D. Parker, WAM 71-1820-40; Onslow, 28.ix.1971, R.J.M., J. Dell, WAM 71-1860-4, QM S48; Rosemary Island, Dampier Archipelago, 27-28.x.1971, R.J.M. WAM 72-120-152, WAM 72-198-219; Warroora Station, 23-24.viii.1970, R.J.M., WAM 70-365-420, WAM 70-232, WAM 70-238, WAM 70-221, 13.vii.1971, B. and D. Parker, WAM 71-1841-5; Warroora Station, 14 mi. north, viii.1968, JG, WAM 69-95.

## DESCRIPTION (After Simon 1909)

Male: Carapace pale tawny-red; area around eye black; cephalic part with two very small dark marks posteriorly; thoracic part marked by a fine marginal line and by very thin, short, dark lines radiating out; carapace covered with white hair becoming light-yellow, and is decorated by a wide white marginal band and a narrower white line in the middle; chelicerae tawny-red; sternum golden-olive covered with white hairs.

Abdomen tawny to brick-coloured, covered above with white to ash-grey hair tinged gold towards the anterior part; a fine line on the dorsal surface anteriorly, not extending past the middle, and with rows of snow-white spots on both sides. Undersurface completely covered with white hair.

Legs pale golden, reddish-tinged towards the extremities, and with some white hairs and a few fine long bristles.

Anterior row of eyes almost equidistant in an almost straight line, about the same width as the second row (smaller than second row); AM almost

twice as large as AL; AL closer to the edge of the clypeus than to the PM; PM separated by a space narrower than a quarter of an eye diameter.

Female: Differs from the male in having the first row of eyes a little narrower than the second row, and the PM larger. The abdomen is pale, brick-coloured, white haired, with a light net-like reticulated pattern and dark variegations. Legs are shorter. Palpi golden-orange with the tips black.

VARIATION: Simon (1909) records 4 retromarginal cheliceral teeth in the description of this species, and Roewer (1954) made *Lycosa meracula* the type species of *Tetrallycosa*.

Both paratypes have 3 + 3 retromarginal cheliceral teeth and of 82 specimens listed above. 81 had 3 + 3 and one (WAM 70-420, an immature female, C.L. 5.4 mm) had 4 teeth on the right side and 3 on the left.

Eye measurements were recorded for 5 specimens; each measurement is given below in Table 18 as a percent of the total width of the first eye row.

Variation in the shape of the epigynum is illustrated in Fig. 9E, I, J, and the internal genitalia of QM S48 is shown in Fig. 9H. The male palpal organ is illustrated in Fig. 9F, G, K.

SIZE RANGE: Mature females C.L. 6.3 to 12.0 mm.

DIAGNOSIS: *Lycosa meracula* is similar to *Lycosa clara* but the lateral furrows of the epigynum converge anteriorly in *L. meracula* and diverge markedly in *L. clara*.

## LIFE HISTORY

Mature females are present from April to October but are more numerous during August to late October. Mature males have been collected in August.

TABLE 18: EYE DIAMETERS AND INTERSPACES OF *L. MERACULA* CONVERTED TO PERCENT OF THE TOTAL WIDTH OF THE FIRST ROW OF EYES

Regd No.	Sex	C.L.	AM	AL	PM	PL	AM:AM	AM:AL	PM:PM	AM:PM	AL:PM
WAM 72-198	♀ M	12.0	26	16	57	49	10	9	30	9	9
WAM 70-211	♀ M	10.1	28	13	60	51	10	6	30	9	10
WAM 71-1807	♀ M	6.3	28	15	64	53	8	5	33	6	9
QM S48	♀ M	11.2	28	14	56	50	6	4	29	9	11
QM S49	♀ M	7.8	26	13	62	51	8	6	27	6	8

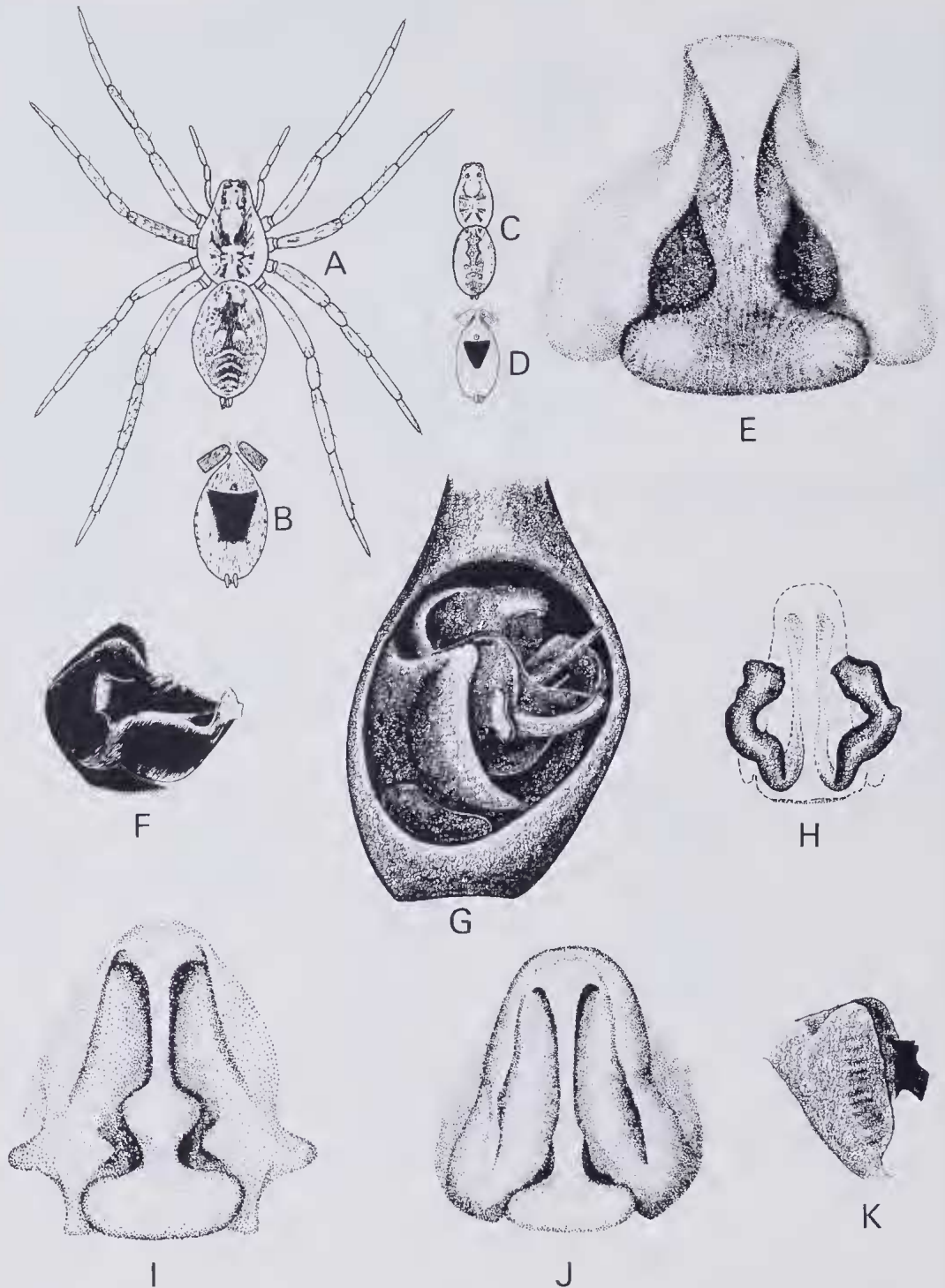


FIG. 9. *Lycosa meracula*. A, mature female WAM 72-198; B, undersurface of abdomen; C, mature female WAM 71-1807; D, undersurface of abdomen; E, epigynum of WAM 70-211; F, median apophysis of male palpal organ from Barrow Island; G, male palpal organ, Barrow Island; H, internal genitalia of female QM S48; I, J, epigyna of females WAM 69-64, WAM 69-65; K, basal part of median apophysis FM from side.

## HABITAT

Coastal sandy soils. Open areas and on wind protected slopes of coastal sand dunes down to the wet sand of the beach. Adult females are found largely in the sand dune areas where they shelter below clumps of dune grass.

## BURROW

An open burrow well lined with silk throughout its length is constructed on the slopes of sand dunes near the base of dune plants, and descends to a depth of between 65 and 130 mm. The entrance frequently collapses after the spider enters the burrow, and if the complete silk tube is excavated from the loose sand, the spider remains motionless within. Adult females may be found wandering well away from the burrow.

## DISCUSSION

Roewer (1960, p. 949) has designated *Lycosa meracula* as the type species of the genus *Tetrallycosa* characterised by the possession of four retromarginal cheliceral teeth, in having the upper tangent of the first row of eyes straight, the first eye row as wide as the second row, the distance AM-AL equal to AM-AM, the diameter of the AM larger than the AL, and the distance PM-PM shorter than the diameter of a PM. An examination of a series of specimens shows that the upper tangent of the first row of eyes is procurved, the first row of eyes is narrower than the second row, the distance AM-AL is shorter than AM-AM.

*Tetrallycosa* is therefore a synonym of *Lycosa*.

The record of this species from Albany, Western Australia (Simon, 1909) is erroneous, as the southern limit of the species appears to be just north of the Murchison River. Station 5 of the Hamburg southwest Australia Expedition of 1905 is Denham, 8, 9, 20 June, 19-20 September. Station 65 'Albany' refers to station 65 Denham, 9, 11, 20 June, 4, 22 September, bushes at the coast, and not station 165 Albany.

*Lycosa tula* (Strand, 1913)  
(Fig. 10A, B, F-L)

*Tarentula tula* Strand, 1913, pp. 622-23, Central Australia.

*Allocosa tula*: Roewer, 1954, p. 207.

*Lycosa tuba* (misspelt): Bonnet, 1957, p. 2667.

*Lycosa tula*: McKay, 1973, p. 380.

## MATERIAL EXAMINED

SYNTYPES: Senckenberg Museum No. 2769, 1 ♂M 1 ♀M, collected V. Leonhardi, 1909, 'Central Australien'.

A lectotype is here designated from this series. Strand (1913) records 4 ♂M 1 ♀P, 1 ♂M in the original description.

LECTOTYPE: Senckenberg Museum No. 2769, ♂M, C.L. ca. 6.5 mm with left palp missing.

OTHER MATERIAL: Western Australia; Albion Downs, Wiluna area, 10.i.1962, BYM, 2 ♂1 ♂M, QM S31; 15.i.1962, BYM, 2 ♀M, QM S33; Albion Downs-Wiluna at Palm Spring Flats, 13.i.1962, BYM, 1 ♂M, QM S32; Buntine Reserve, 3.5 km east of Buntine Railway Station, 2.ix.1972, AB, 10 ♀M, WAM 72-660-69.

## DESCRIPTION (After Strand 1913)

Female: Carapace dark brown with radiating black stripes, a distinct marginal band of white hair and a longitudinal pale median stripe which at the fovea is about 0.7 mm wide, and gradually broadens anteriorly and posteriorly; at the ocular quadrangle this stripe abruptly narrows to continue anteriorly between the PM and AM eyes to the clypeus; paturon and fang black; labium and maxillae black with a lighter margin; sternum and coxae black. Abdomen brown with lighter and darker spots; a median longitudinal stripe of dirty-yellow hair which has, anteriorly, a black longitudinal band about 1.5 mm wide which continues to the middle of the abdomen where it becomes less distinct and continues to the spinnerets; on each side of this band before the middle is a small denticle; sides and belly yellow-grey with usually a deep black spot which stretches from the fissure to the beginning of the posterior third of the belly where the margin is more or less rounded; epigaster light coloured. Legs yellow-brown; the femora are lighter on the ventral surface; indications of darker spots on the sides and dorsal surface; scopula black; terminal segment of palpi mainly black.

Chelicerae with three promarginal and three retromarginal teeth.

Male similar to female but with a more distinct median stripe on the dorsal surface of the abdomen.

VARIATION: The median longitudinal stripe on the dorsal surface of the abdomen may be indistinct in preserved specimens; sides of abdomen, spotted with brown or black; the black field on the ventral surface of the abdomen may occupy half the length of the abdomen to almost the complete length of the venter, but not reaching the spinnerets. Legs ringed with dark brown in some adults.

Anterior row of eyes procurved, shorter than second row. Ratio of eyes (lectotype) in micrometer units AM:AL:PM:PL = 12:7:28:25;

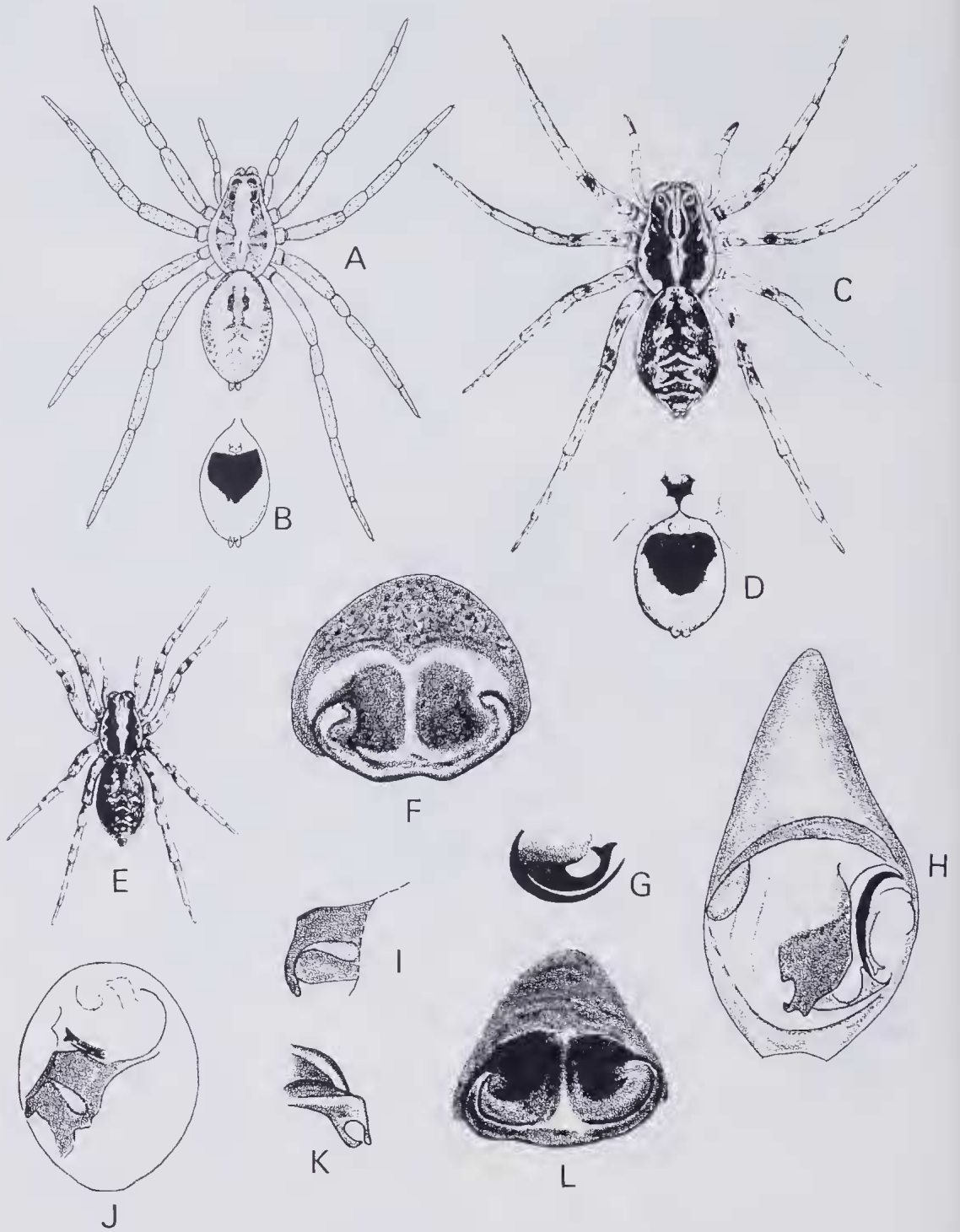


FIG. 10. *Lycosa tula*. A, mature female from Albion Downs; B, underside of abdomen; F, epigynum of paralectotype; G, embolic guide and embolus of male from Albion Downs; H, male palpal organ from Albion Downs; I, median apophysis of lectotype; J, embolic guide and median apophysis of lectotype; K, median apophysis of male from Albion Downs; L, epigynum of female from Albion Downs.  
*Lycosa woonda*. C, female from Kalgoorlie; D, underside of abdomen; E, female from Kalgoorlie.

distance AM-AM 6, AM-AL 4, AM-PM 3, AL-PM 3, PM-PM 15. Clypeus to AM 4. Width of first eye row 49; width of second eye row 66. The eye measurements for the lectotype, paralectotype, and two Western Australian specimens are expressed as a percent of the total width of the first eye row in Table 19.

Epigynum of the paralectotype illustrated in Fig. 10F; a specimen from Albion Downs in Fig. 10L. The median apophysis of the lectotype male palpal organ is shown in Fig. 10I, J; the male palpal organ and the median apophysis of a specimen from Albion Downs shown in Fig. 10G, H, K.

DIAGNOSIS: *Lycosa tula* has a distinct black shield on the ventral surface of the abdomen; the male palpal organ is of characteristic shape with a distinct median apophysis that lacks a spine on the upper margin, and the tip of the embolic guide is bifurcate.

LIFE HISTORY

Unknown.

HABITAT

Red earths with sparse vegetation in arid regions of Western Australia and 'Central Australia'. At Buntine Reserve the substrate was deep yellow sand with sandplain vegetation of wattles and *Grevillea* species.

DISCUSSION

*Lycosa tula* is one of several arid zone wolf spiders of very similar appearance. A black shield-like marking is quite common on the ventral surface of the abdomen of these species and the female genitalia may be similar in shape. The shape of the median apophysis and the embolic guide of mature male palpal organs allows a separation of the various species and therefore mature males should be collected to provide positive identification. A number of undescribed species are present in inland Australia; these await the collection of conspecific males before description is justified.

*Lycosa woonda* sp. nov.  
(Figs. 10C, D, E, 11A-E, 121)

MATERIAL EXAMINED

HOLOTYPE: Queensland Museum QM S34, ♂M, C.L. 7.2 mm, Albion Downs via Wiluna, Western Australia, collected by Dr B. Y. Main, 15 January, 1962. In spirit.

PARATYPES: Albion Downs via Wiluna, W.A., 15.i.1962, BYM, 2 ♂M, QM S35; 10.i.1962, BYM, 2 ♂M, QM S36; Albion Downs, Wiluna, W.A., at Palm Spring Flats, 13.i.1962, BYM, 1 ♂M, QM S37; Moorine Rock, W.A., 29.viii.1954, BYM, 1 ♂M, QM S38; Kalgoorlie, W.A., ix.1968, A. McKay, 1 ♂M 2 ♀P 1 ♀P, QM S39.

DESCRIPTION (Based on the holotype)

Carapace brown with a pale longitudinal stripe commencing behind the PM eyes and broadening behind the PL eyes to taper towards the anterior end of the fovea where it expands in a somewhat diamond-shape and then again tapers to the posterior margin; within this longitudinal stripe are two curved brown stripes (Fig. 10C); a serrated cream marginal band containing scattered dark spots; margin of carapace with an irregular brown band-like pattern outlined by a thin creamy-white band on the lateral edge; irregular dark-brown, somewhat wedge-shaped markings radiate out from the foveal area; long pale cream hairs project anteriorly from the ocular quadrangle; paturon brown with a dense covering of pale cream hair, fang dark brown; labium and maxillae brown with the anterior margin lighter brown; sternum dark brown, almost black; coxae light brown with the anterior surface of the first pair dark brown. Abdomen light brown to fawn above with a bell-shaped dark brown mark that continues posteriorly to terminate in an inverted V-shaped chevron; more posteriorly are vague dark chevrons, the last has the ends expanded into a more or less distinct tent-shaped spot; sides of abdomen cream with scattered dark spots and blotches; ventral surface light brown to cream with a jet black transverse shield-shaped spot commencing behind the epigastric furrow and terminating half-way to the spinnerets. Legs brown with indistinct darker rings on segments;

TABLE 19: EYE DIAMETERS AND INTERSPACES OF *L. TULA* CONVERTED TO PERCENT OF THE TOTAL WIDTH OF THE FIRST ROW OF EYES

Regd No.	Sex	C.L.	AM	AL	PM	PL	AM:AM	AM:AL	PM:PM	AM:PM	AL:PM
LECTOTYPE	♂M	6.5	24	14	57	51	12	8	31	6	6
PARALECTOTYPE	♀M	8.5	23	15	54	49	12	8	26	9	9
WAM 72-660	♀M	6.3	25	15	61	53	9	5	30	6	9
QM S31	♂M	6.0	27	14	64	54	8	5	30	8	9

femora with indistinct dark elongate blotches on the prolateral and retrolateral surfaces.

Anterior row of eyes procurved, shorter than the second row; AM larger than AL. Ratio of eyes in micrometer units AM:AL:PM:PL = 12:7:30:25; distance AM-AM 4, AM-AL 6, PM-PM 15, AM-PM 2, AL-PM 3. Clypeus to AM 6. Width of first eye row 51; width of second eye row 73.

Chelicerae with three promarginal teeth on the right side, 2 on the left side; three retromarginal teeth of about equal size.

Male palpal organ with a broad somewhat spoon-shaped median apophysis with a terminal hook and an anteriorly directed sharp basal spine; embolic guide a flat half circle (Fig. 11A-C).

VARIATION: Two females from Kalgoorlie are illustrated (Fig. 10C, D, E). The longitudinal stripe on the carapace may lack the two curved brown marks behind the PL eyes in some examples, and the brown spots on the lateral band may be very pronounced or quite faint.

The eye diameters and interspaces of the holotype and three paratypes are given in Table 21 as a percent of the total width of the first eye row. The epigyna of two females from Albion Downs are illustrated in Fig. 11D, E. The internal genitalia of female QM S37 is illustrated in Fig. 12I. The median apophysis of the holotype is shown in Fig. 11B, and rotated slightly forwards in Fig. 11C.

DIAGNOSIS: The male palpal organ is characteristic. Females may be confused with *L. tula* but normally have the ends of the transverse guide of the epigynum very broad and raised.

TABLE 20: MEASUREMENTS OF LEG SEGMENTS OF HOLOTYPE OF *L. WOONDA* IN MM

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus
1	5.7	2.7	4.7	5.2	2.5
2	5.7	2.7	4.6	5.2	2.5
3	5.4	2.4	3.8	5.3	2.6
4	6.6	2.5	5.5	7.5	2.8

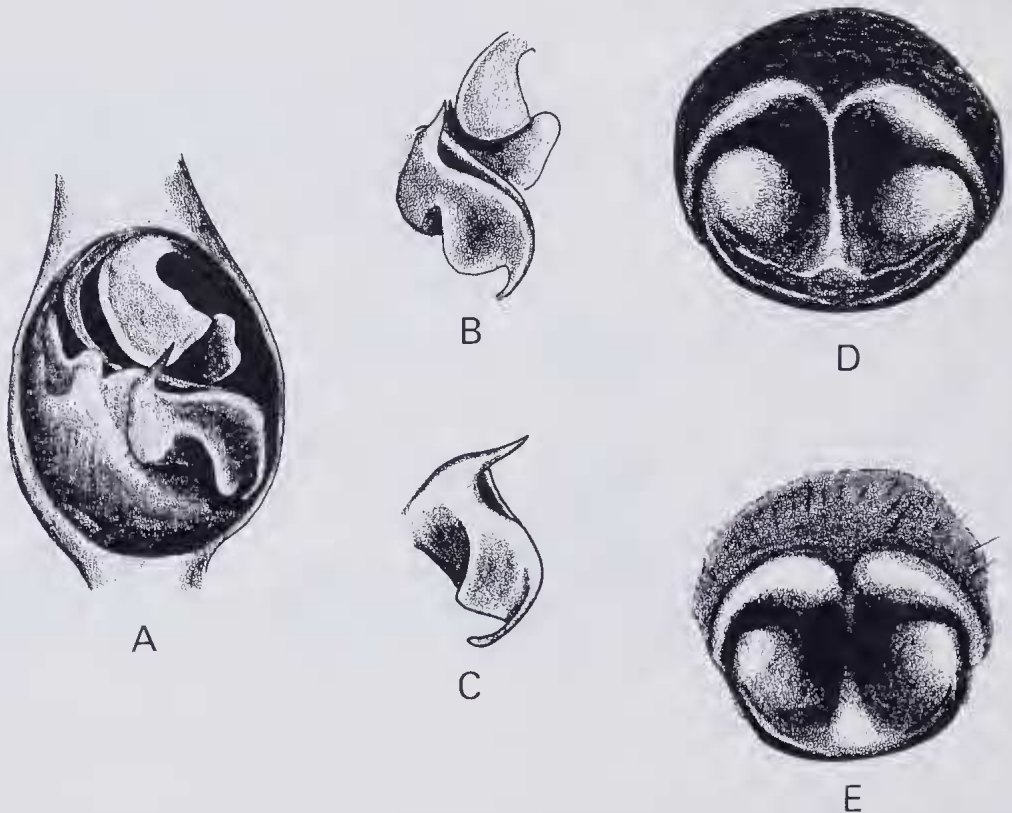


FIG. 11: *Lycosa woonda*. A, male palpal organ of holotype; B, embolic guide, conductor and median apophysis of holotype; C, median apophysis of holotype rotated slightly forwards to show comparative length of basal spine and terminal hook; D, E, epigyna of mature females from Albion Downs.

TABLE 21: EYE DIAMETERS AND INTERSPACES OF *L. WOONDA* CONVERTED TO PERCENT OF THE TOTAL WIDTH OF THE FIRST ROW OF EYES

Regd No.	Sex	C.L.	AM	AL	PM	PL	AM:AM	AM:AL	PM:PM	AM:PM	AL:PM
HOLOTYPE	♂M	7.2	23	14	59	49	8	12	30	4	6
QM S37	♀M	9.1	26	14	62	53	9	8	30	5	6
QM S38	♀M	8.5	25	15	59	51	10	5	33	7	7
QM S39	♀M	6.3	26	14	60	50	10	8	28	4	6

## LIFE HISTORY

Unknown.

## HABITAT

Red desert loam soils with scattered Mulga *Acacia aneura*.

## BURROW

Unknown.

## DISCUSSION

See *Lycosa tula*.

## DERIVATION

From the aboriginal 'woonda' meaning shield, in reference to the shield-shaped black spot on the ventral surface of the abdomen.

*Lycosa yalkara* sp. nov.  
(Fig. 12A-H, J, K)

## MATERIAL EXAMINED

HOLOTYPE: Queensland Museum QM S40, ♂M, C.L. 7.8 mm, 40 km south of Mount Magnet, Western Australia, collected by R. J. McKay and J. Gilbert, 7 December, 1968. In spirit.

PARATYPES: Western Australia; Cue 2 km south, 2.ii.1970, JG, 1 ♂M, QM S43; Marloo Station, west of Yalgoo, 31.i.1968, A. Douglas, L. Koch, 1 ♀M, WAM; Mount Gibson, 27.ii.1962, BYM, 1 ♀M, QM S44, 28.ii.1962, BYM, 1 ♂M 1 ♀M, QM S42; Paynes Find, 28.ii.1970, RJM, 1 ♀M 1 ♂M, QM S41.

## DESCRIPTION (Based on the holotype)

Carapace brown with a pale longitudinal stripe commencing behind the PM eyes and broadening behind the PL eyes to form a lateral round protuberance enclosing a conspicuous dark brown spot on each side before tapering to the fovea where the stripe broadens once again before tapering to the lateral margin; a pale marginal band that is irregularly serrated on the upper margin and does not meet on the posterior mid-line contains five to six dark brown blotches located on the lateral margin of the carapace;

elongate wedge shaped dark brown markings radiate out from the centre of the carapace between the pale longitudinal stripe and lateral band to terminate in dark brown V or wedge-shaped expansions projecting into the lateral band; these radiating dark brown markings are immediately preceded by a faint pale line or stripe; pale hairs project anteriorly from the ocular quadrangle; paturon dark brown covered with pale hairs; fang dark brown; labium and maxillae brown, lighter anteriorly; sternum and coxae dark brown to black. Abdomen light brown with a dark brown rather diffuse bell-shaped marking followed by a series of poorly defined dark brown chevrons; the dorsal surface spotted with dark brown, sides streaked with brown, and the anterior slope dark brown on either side of the median pale stripe; just before the spinnerets on either side is a pale fawn spot edged with dark brown anteriorly; ventral surface pale fawn with a jet black shield-shaped spot commencing at the epigastric furrow and terminating before the spinnerets. Legs brown, with irregular dark brown blotches.

Anterior row of eyes procurved, shorter than the second row; AM larger than AL. Ratio of eyes in micrometer units AM:AL:PM:PL = 14:9:35:29; distance AM-AM 6, AM-AL 4, PM-PM 15, AM-PM 3, AL-PM 3. Clypeus to AM 8. Width of first eye row 58; width of second eye row 80.

Chelicerae with three promarginal teeth, the middle one largest; three retromarginal teeth, the middle one slightly larger than the laterals.

Male palpal organ with a robust median apophysis terminating in a flat recurved hook; embolic guide with a bifurcate tip.

TABLE 22: MEASUREMENTS OF LEG SEGMENTS OF  
*L. YALKARA* IN MM

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus
1	6.5	3.2	5.5	6.0	2.8
2	6.1	3.0	5.1	5.8	2.7
3	6.0	2.5	4.5	6.1	2.6
4	7.1	2.7	5.9	8.5	3.4

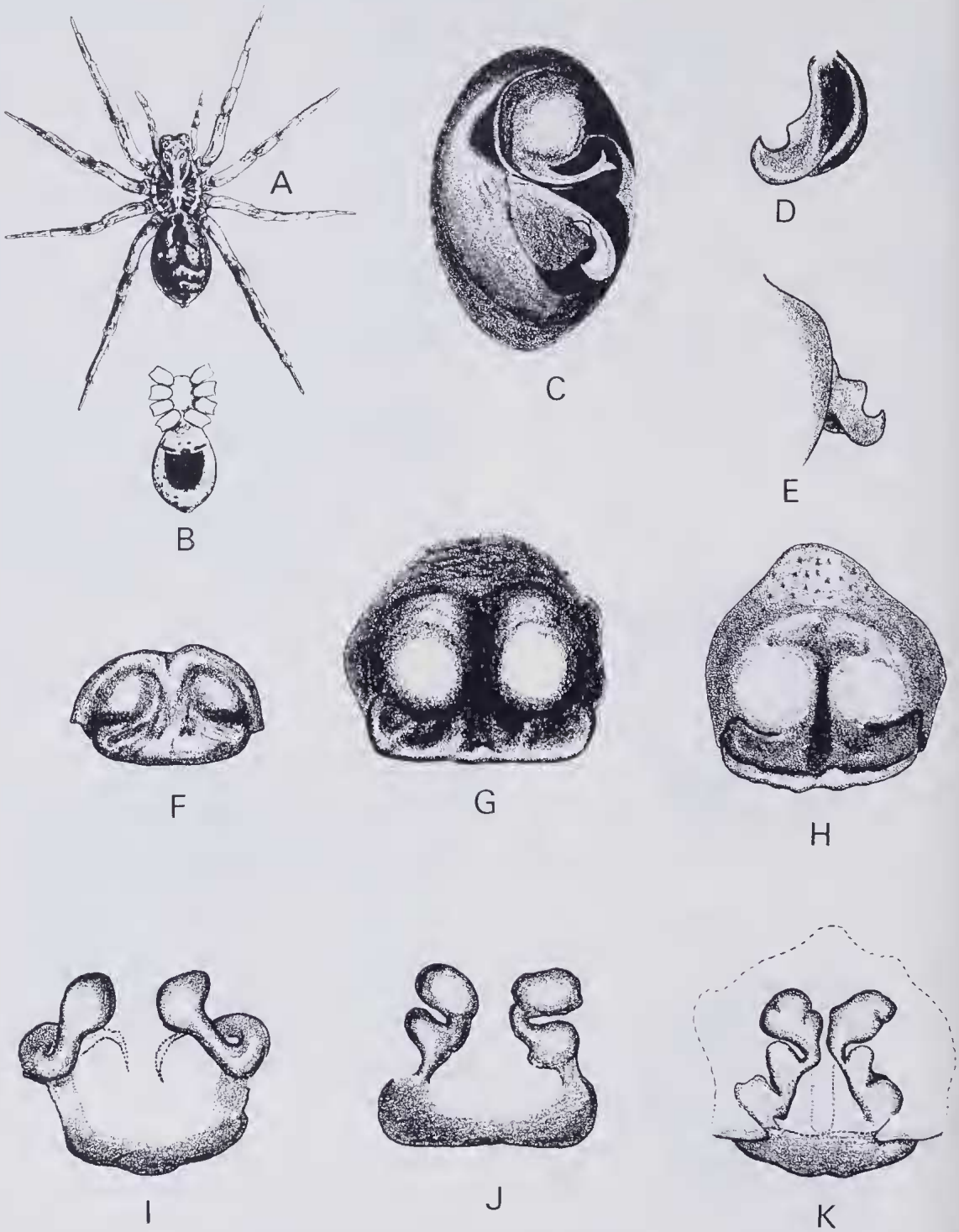


FIG. 12: *Lycosa yalkara*. A, mature female from Marloo Station; B, undersurface of abdomen; C, male palpal organ of QM S41; D, outer view of median apophysis of QM S41; E, inner view of median apophysis of QM S41 from side; F, G, H, epigyna of females QM S42, QM S44, QM S41; J, K, internal genitalia of females QM S44, QM S41.

*Lycosa woonda*. I, internal genitalia of QM S37.



TABLE 23: EYE DIAMETERS AND INTERSPACES OF *L. YALKARA* CONVERTED TO PERCENT OF THE TOTAL WIDTH OF THE FIRST ROW OF EYES

Regd No.	Sex	C.L.	AM	AL	PM	PL	AM:AM	AM:AL	PM:PM	AM:PM	AL:PM
HOLOTYPE	♂M	7.8	24	16	60	50	10	7	26	5	5
QMS43	♂M	8.7	24	14	59	52	10	7	28	7	7
WAM	♂M	8.8	25	17	58	55	8	7	27	7	8
QMS44	♂M	9.7	25	16	58	51	8	7	28	6	7

VARIATION: Three female epigyna are illustrated in Fig. 12F, G, H, and the internal genitalia of two females (Fig. 12J, K) are compared with the internal genitalia of *L. wooda* (Fig. 12I). The eye diameters and interspaces of the holotype and three paratypes are given in Table 23 as a percent of the total width of the first eye row.

DIAGNOSIS: Mature males with a bifurcate tip to the embolie guide and a robust median apophysis terminating in a flat hook. Female epigynum with a broad transverse guide and no median guide.

#### LIFE HISTORY

Unknown.

#### HABITAT

Red desert loam soils with scattered Mulga *Acacia aneura*.

#### BURROW

Unknown.

#### DISCUSSION

See *Lycosa tula*.

#### DERIVATION

From the aboriginal 'yalkara' meaning drought spirit.

#### ACKNOWLEDGMENTS

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PLATE I

A-B: *Lycosa ariadnae*, male palpal organ.

